Front - Golf, GTI, Jetta & New Beetle

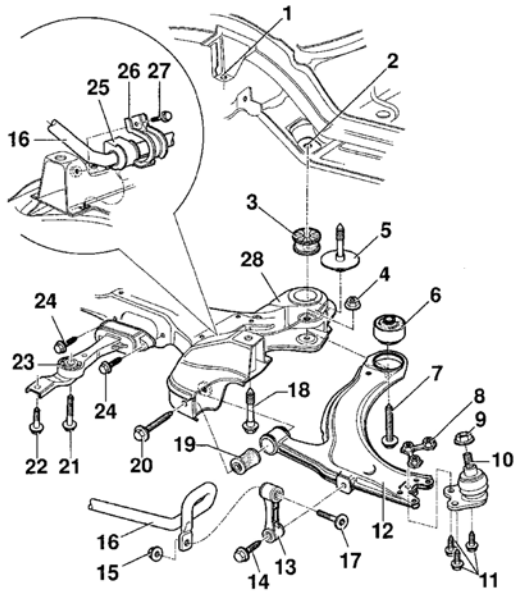
APPLICATION

1999 MODEL YEAR

Information in this article applies to late production 1999 vehicles. For Golf and GTI, the 7th and 8th characters of the VIN are 1Jfor the late 1999 production vehicles. For Jetta, 7th and 8th characters of the VIN are 9M for the late 1999 production vehicles. For information on early production 1999 models, see **SUSPENSION - FRONT** article.

DESCRIPTION

FWD suspension system is equipped with MacPherson struts. Steering knuckles are supported by lower control arms and vertically mounted strut assemblies. See **Fig. 1** .



1- Subframe Retaining Bracket
Do Not Rework Captive Nut;
Replace Rubber Mount Bracket
2- Welded Nut In Body
If Threads Are Damaged, Thread Can Be Serviced
With Heli-Coil Insert
3- Subframe Bonded Rubber Bushing
4- Self-Locking Nut
Always Replace
5- Hex Bolt (M14 x 1.5 x 63)
6- Rear Bonded Rubber Bushing For Control Arm
7- Hex Bolt (M12 x 1.5 x 70)
8- Plate With Nuts
9- Self-Locking Nut
Always Replace
10- Ball Joint
11- Hex Head Bolt
Always Replace
12- Control Arm
13- Connecting Link
14- Hex Bolt
Always Replace
15- Self-Locking Nut
Always Replace
16- Stabilizer Bar
Subframe Must Be Lowered To Remove
17- Socket Head Bolt
18- Hex Head Bolt (M14 x 1.5 x 95)
19- Front Bonded Rubber Bushing For Control Arm
20- Hex Bolt (M12 x 1.5 x 82)
21- Hex Head Bolt (M10 x 70)
Always Replace
22- Hex Head Bolt (M10 x 30)
Always Replace
23- Transmission (Pendulum) Support
24- Hex Head Bolt (M8 x 48)
Always Replace
25- Rubber Mount
26- Mounting Bracket
27- Hex Bolt
28- Subframe
Do NOT Service Thread For Control Arm Front
Rubber Mount

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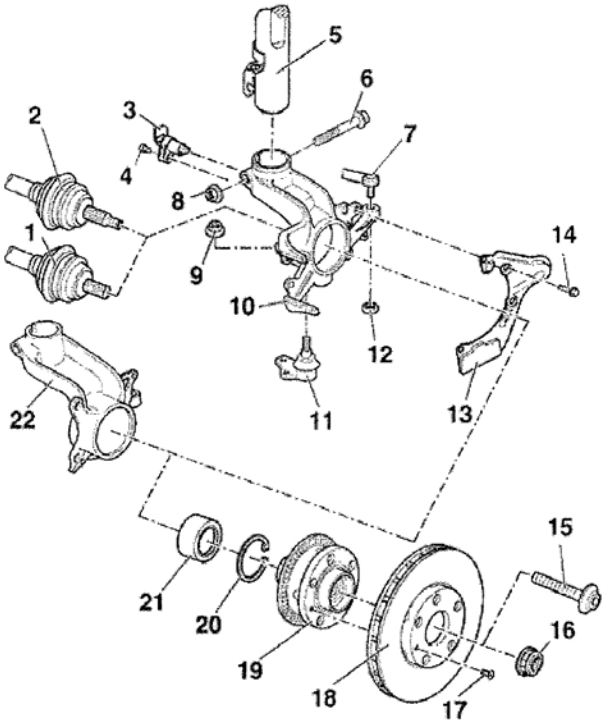
Fig. 1: Exploded View Of Front Suspension
Courtesy of VOLKSWAGEN UNITED STATES, INC.



1- Axle Shaft (GTI)
2- Axle Shaft (All Others)
3- ABS Speed Sensor
4- Hex Socket Head Bolt
5- Suspension Strut
6- Hex Bolt
- Always Replace, Hex Bolt Point MUST Point In Normal Direction Of Travel

7- Tie Rod End
8- Self-Locking Nut
- Always Replace

9- Self Locking Nut
- Always Replace

10- Wheel Bearing Housing (1.9 TDI & 2.0L)
11- Ball Joint
12- Self-Locking Nut
- Always Replace

13- Shield Plate
14- Hex Bolt
15- Hex Bolt GTI
- Always Replace

16- Self-Locking 12 Point Nut
- Always Replace

17- Phillips Head Screw
18- Brake Disc
19- Wheel Hub With Speed Sensor Rotor
20- Circlip
21- Wheel Bearing
22- Wheel Bearing Housing (1.8L Turbo & 2.8L VR6)

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Fig. 2: Exploded View Of Wheel Bearing Housing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Various springs options are installed depending on engine and equipment level. On Golf, GTI and Jetta, each

spring is allocated to a certain weight class. For example, weight class V46 corresponds to coil spring 1J0 411 105 CD. Which springs are installed in the vehicle, is documented on the vehicle data label with the relevant PR. (part) number of the weight class. Identifying PR number will ensure correct spring is installed on vehicle. The vehicle data label is located in the spare wheel recess, and also in service booklet. See **Fig. 3** .

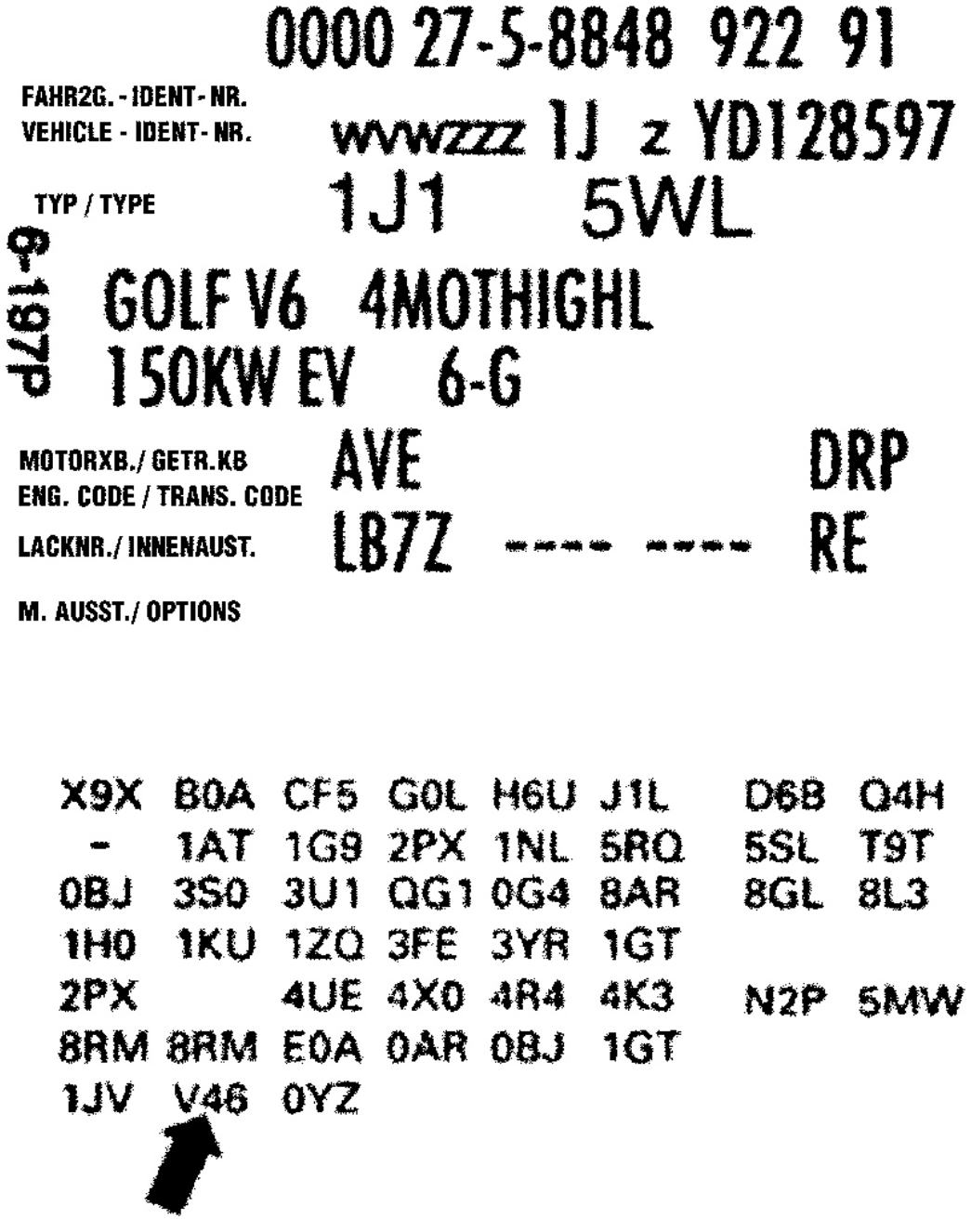
On New Beetle, different suspension versions are available as optional equipment. Suspension version installed is indicated on vehicle data plate, with relevant PR number. See **SUSPENSION VERSION IDENTIFICATION (NEW BEETLE)** table. On models built up to March 2000, vehicle data plate is located in spare wheel well. On models built after April 2000, vehicle data plate is located next to spare wheel well, near left rear wheel housing.

SUSPENSION VERSION IDENTIFICATION (NEW BEETLE)

PR Number	Suspension Version
1GJ	Base Suspension (2nd Version)
1GD	Sport Suspension (Comfort Version)
G87	(1) Sport Suspension
(1) On models built 7/2000 and Up.	

Vehicles with gas discharge lights are equipped with automatic headlight range control. Automatic headlight range control requires information on front and rear axle suspension spring compression and extension to function. Altitude (inclination) of the left lower link in relationship to body is passed to vehicle left front level control system sensor via a connecting link. Sensor passes signals onto headlight range control module. Rear axle signals are passed to control module by the vehicle left rear level control system sensor. These signals are required to determine the inclination of the vehicle. Automatic headlight range control reacts automatically to changes in the vehicle inclination. Vehicle inclination can change with the following situations:

- Towing a trailer.
- Vehicle empty, vehicle partially or fully loaded.
- Driving slowly or very fast.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FAHR2G. - IDENT- NR.
VEHICLE - IDENT- NR.
WVWZZZ 1J z YD128597
TYP / TYPE
1J1 5WL
6-197P
GOLF V6 4MOTHIGHL
150KW EV 6-G
MOTORXB./ GETR.KB
ENG. CODE / TRANS. CODE
AVE DRP
LACKNR./ INNENAUST.
LB7Z ---- ---- RE
M. AUSST./ OPTIONS
X9X B0A CF5 G0L H6U J1L D6B Q4H
- 1AT 1G9 2PX 1NL 5RQ 5SL T9T
0BJ 3S0 3U1 QG1 0G4 8AR 8GL 8L3
1H0 1KU 1ZQ 3FE 3YR 1GT
2PX 4UE 4X0 4R4 4K3 N2P 5MW
8RM 8RM E0A 0AR 0BJ 1GT
1JV V46 0YZ
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Fig. 3: Identifying Vehicle Data Plate (Golf, GTI & Jetta)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

ADJUSTMENTS & INSPECTION

WHEEL ALIGNMENT SPECIFICATIONS & PROCEDURES

NOTE: See appropriate SPECIFICATIONS & PROCEDURES article in WHEEL ALIGNMENT.

BALL JOINT CHECKING

Raise and support vehicle. Inspect ball joints for excessive play and damaged rubber boots. There should be no vertical or horizontal ball joint play. See **Fig. 4** . Replace ball joint if any play exists. See **BALL JOINT** under REMOVAL & INSTALLATION.

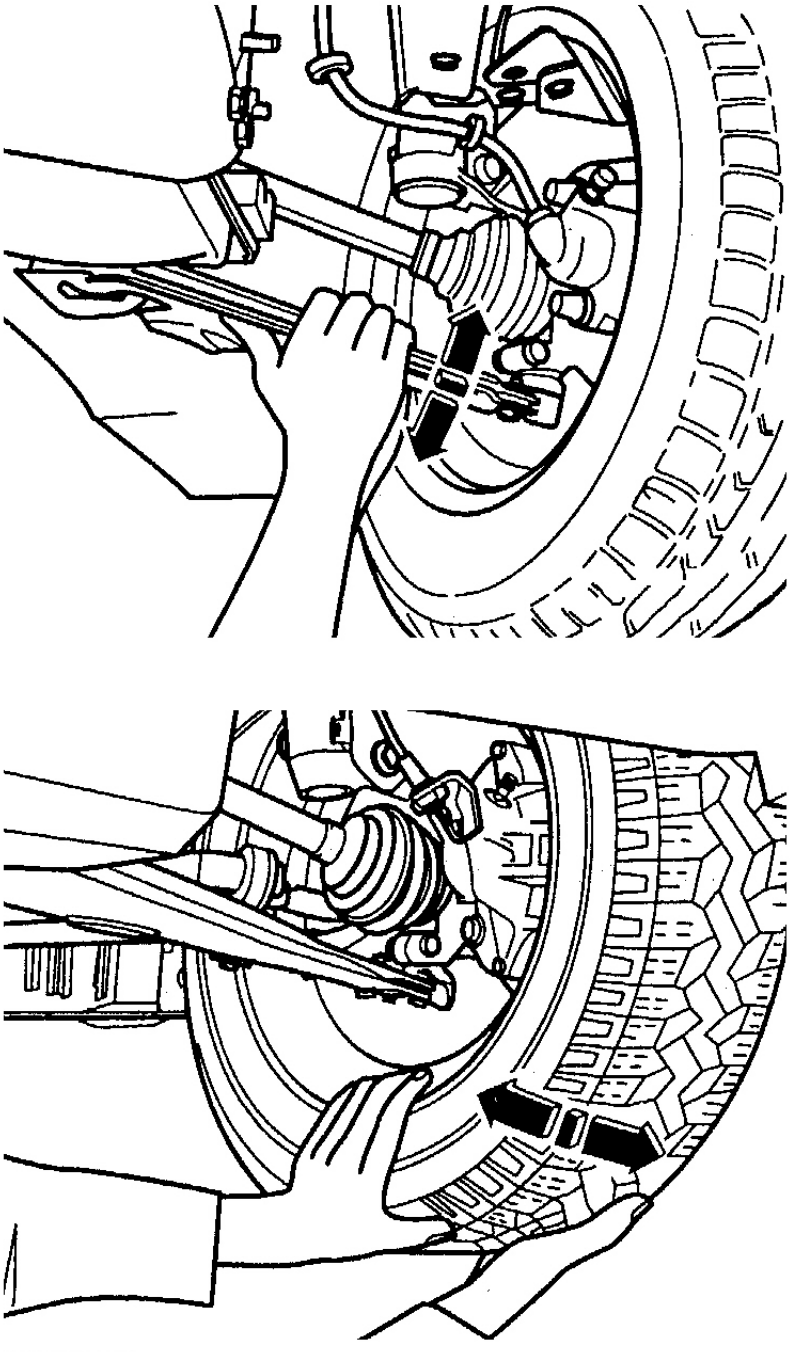

Fig. 4: Checking Ball Joints
Courtesy of VOLKSWAGEN UNITED STATES, INC.

WHEEL BEARING

NOTE: **Wheel bearing and wheel hub are installed together in a housing. This wheel bearing/hub unit is maintenance and adjustment free. Adjusting and servicing is not possible. Replace wheel bearing and wheel hub if any damage exists. See WHEEL BEARING (WHEEL BEARING HOUSING REMOVED FROM VEHICLE) under REMOVAL & INSTALLATION.**

SERVICING

FRONT SUBFRAME WELDED NUT THREADS

Servicing work may only be carried out once per thread. If servicing is necessary after this, the nuts must be replaced. Observe the operating instructions of the VAS (VW) repair kit.

CAUTION: When drilling, it is essential that eye protection be worn!

Have the thread repair checked by the responsible foreman or next person in charge. Correct any damage to the underbody sealant layer. Only use the VAS repair kit listed in the for service work .

VAS THREAD REPAIR KIT

Thread	VAS Part No.
M10	6024
M12x1.5	6058
M14x1.5	6027

REMOVAL & INSTALLATION

BALL JOINT

Removal & Installation

1. Remove hub cap. Loosen 12-point axle nut or bolt. Raise and support vehicle. Remove wheel. On models equipped with 1.9L TDI, remove air duct between charge air cooler and turbocharger. On all models, remove sound insulation panel. Mark position of ball joint to lower control arm. Remove 3 ball joint-to-lower control arm bolts.
2. Remove axle nut. Using Press Tool (3283) or equivalent, press axle shaft out of hub. See **Fig. 5** . Ensure sufficient clearance is available. Secure axle shaft to body with wire. Axle shaft must not be allowed to hang down, or inner joint will be damaged through overflexing.

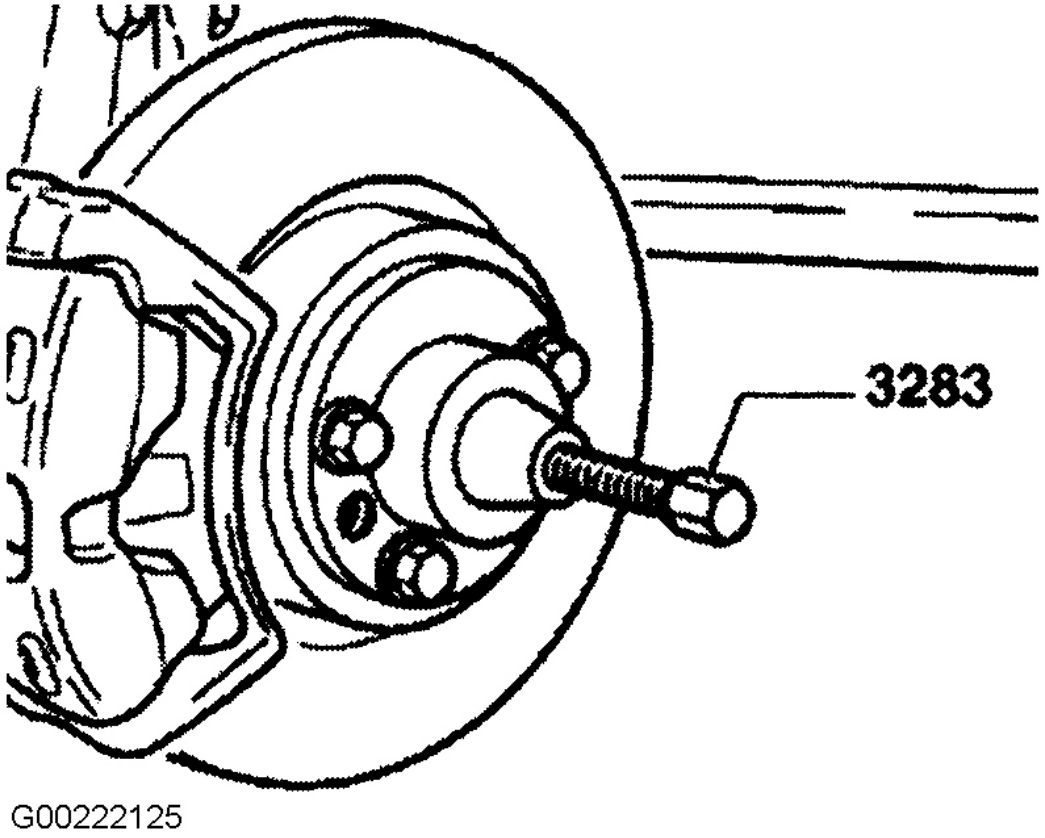

Fig. 5: Pressing Axle Shaft From Hub Assembly
Courtesy of VOLKSWAGEN UNITED STATES, INC.

3. Pull wheel bearing housing with ball joint out from control arm. Swing wheel with suspension strut outward and support.
4.

WARNING: Place engine/transmission jack VAG 1383/A, or similar, below control arm to ensure safety (danger of accident through falling parts when pressing out ball joint).

Using Ball Joint Puller (3287A) or equivalent, press out ball joint. See **Fig. 6** . To protect ball joint threads and for safety reasons leave nut on a few turns.

5. Install ball joint to wheel bearing housing. Using NEW self-locking nut counter-hold ball joint and tighten to specification. See **TORQUE SPECIFICATIONS** . To complete installation, reverse remaining removal procedure.

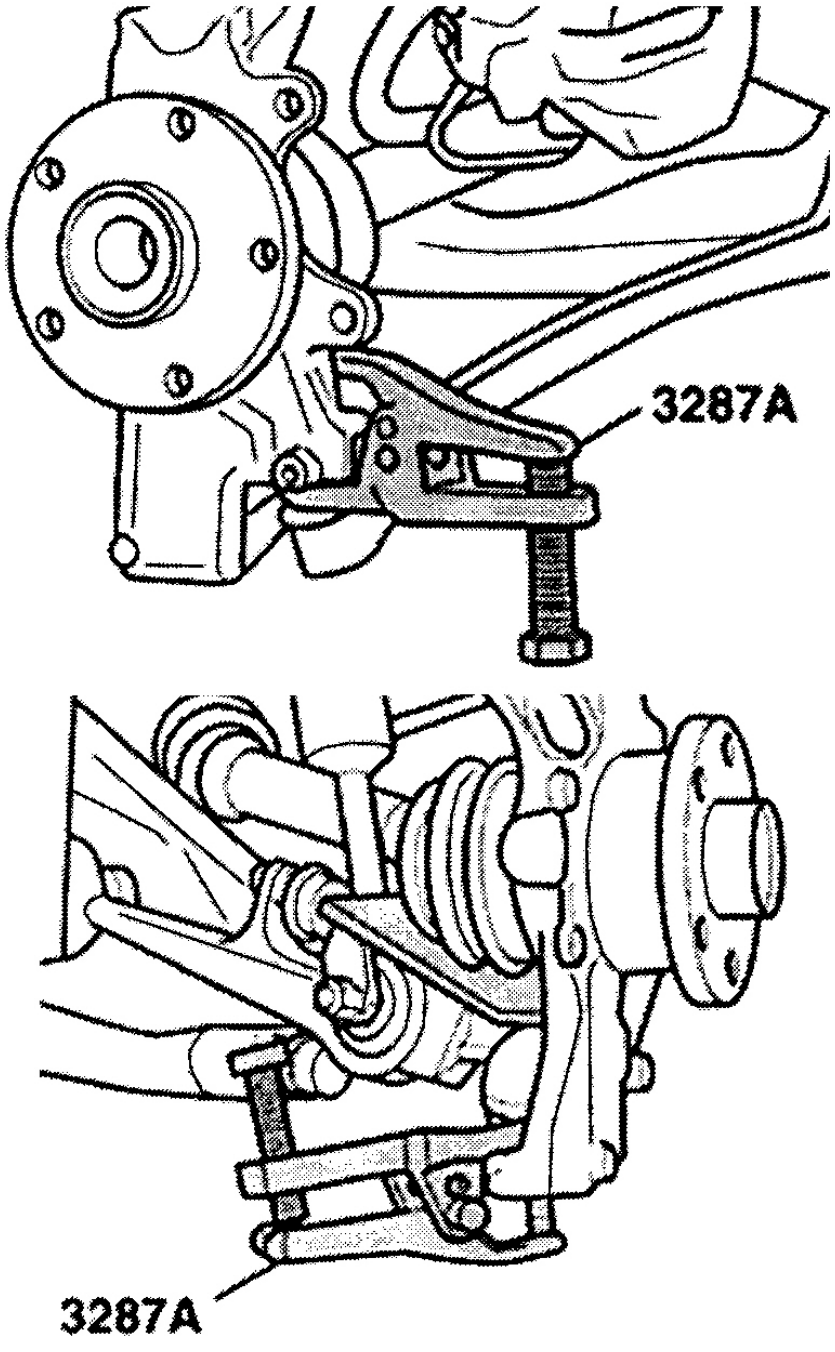

Fig. 6: Removing Ball Joint
Courtesy of AUDI OF AMERICA, INC.

LOWER CONTROL ARM

Removal

1. Raise and support vehicle. Remove wheel.
2. For four wheel drive vehicles, the coupling link for vehicle left front level control system sensor (G78) on front axle must be disconnected from the control arm bracket before removing the left control arm. See **Fig. 7** .

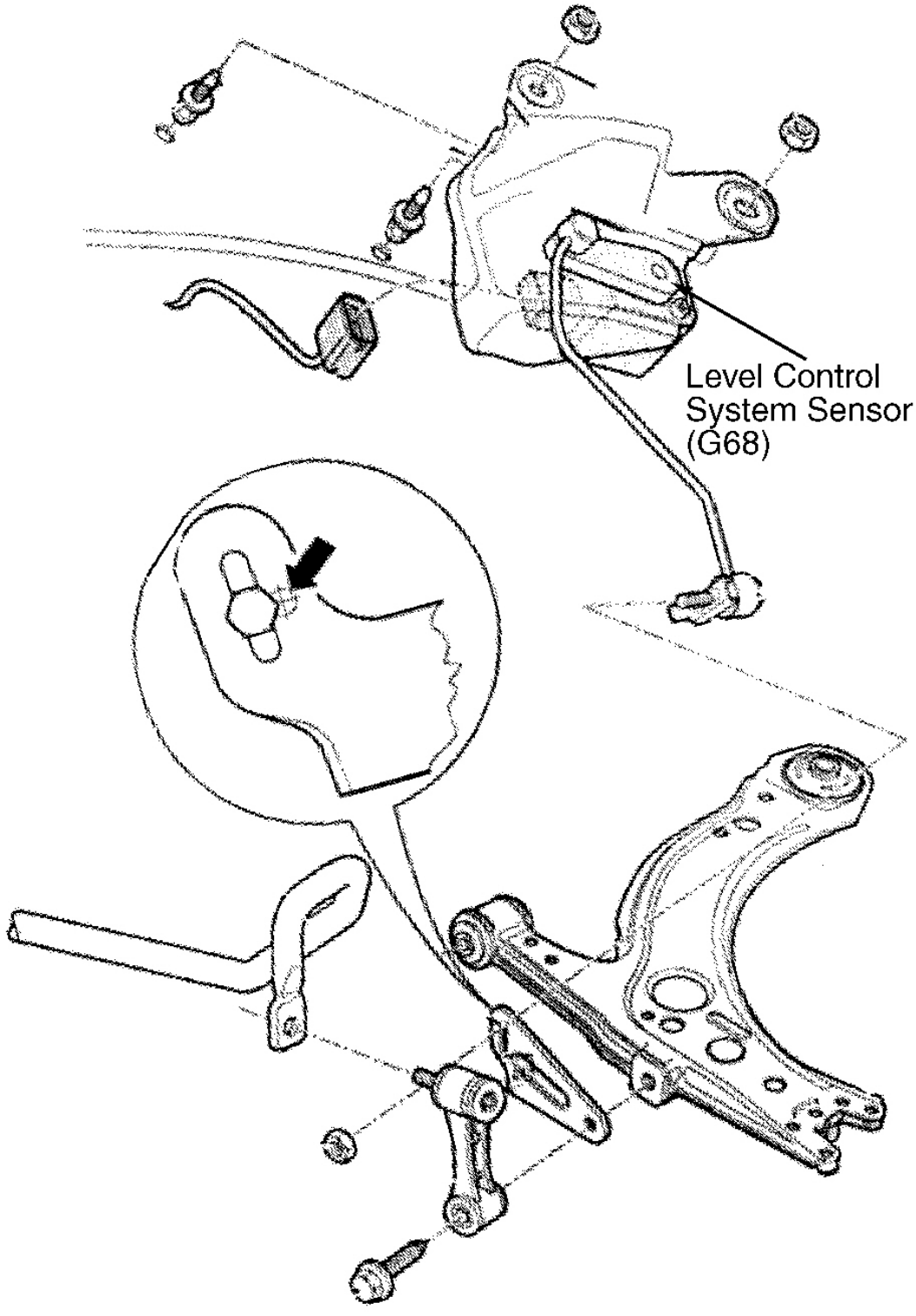

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Fig. 7: Locating Level Control System Sensor (AWD)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

3. On models equipped with TDI or 1.8L engines, remove intake air duct between charge air cooler and turbocharger. On all models, remove sound insulation panels. See **Fig. 8** . Mark position of ball joint to lower control arm. Remove 3 ball joint-to-lower control arm bolts.

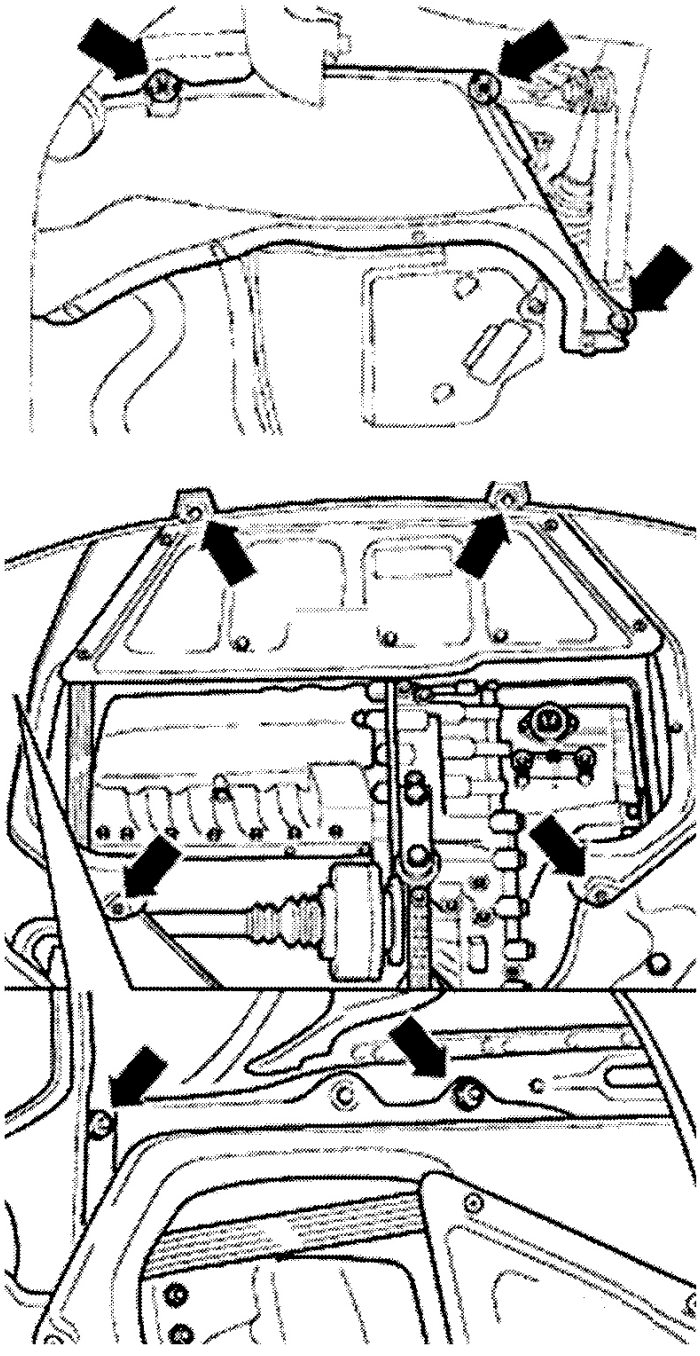

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Fig. 8: Locating Sound Insulation Panels
Courtesy of VOLKSWAGEN UNITED STATES, INC.

4. On vehicles equipped with manual transmission, go to next step. On vehicles equipped with automatic

transmission, remove pendulum support-to-subframe bolts. See **Fig. 9** .

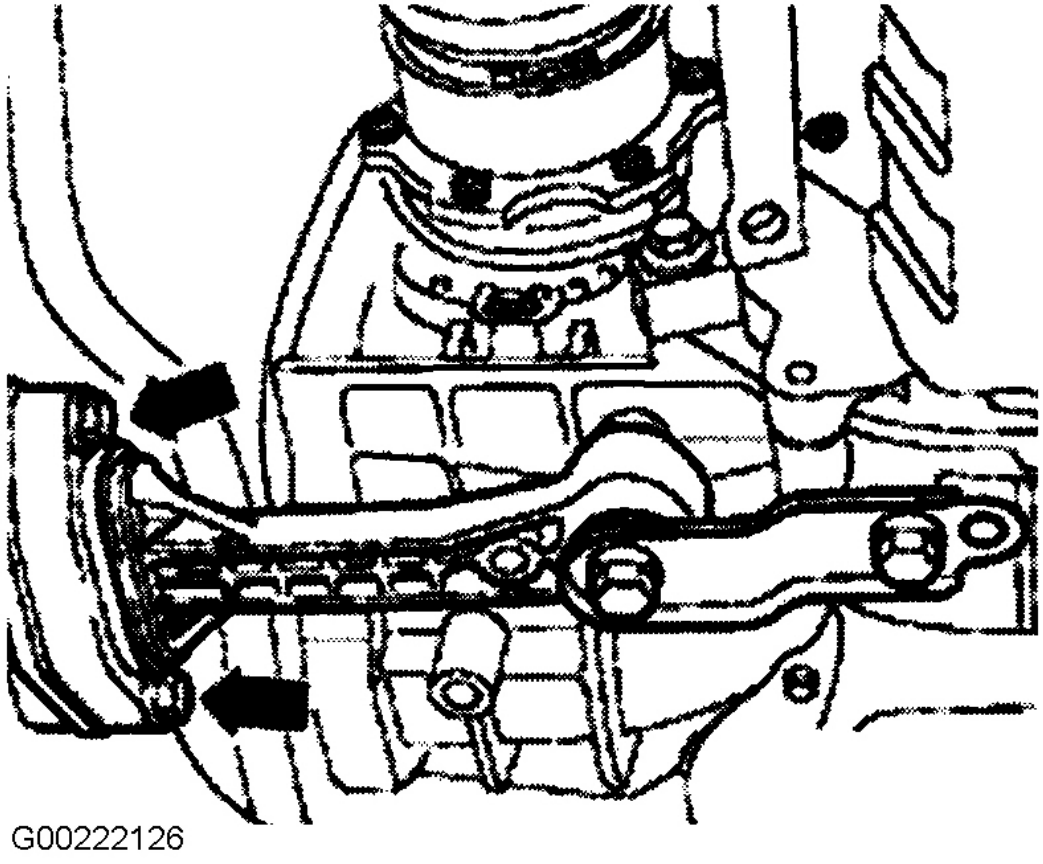


Fig. 9: Removing Pendulum Support Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

5.

NOTE: On vehicles with automatic transmission, Push engine/transmission assembly forward (i.e. using lever).

Remove axle shaft-to-drive flange bolts. Remove stabilizer bar link rod nut, washers, and bushings from control arm. Remove control arm-to-subframe bolts. See **Fig. 10** . Remove control arm.

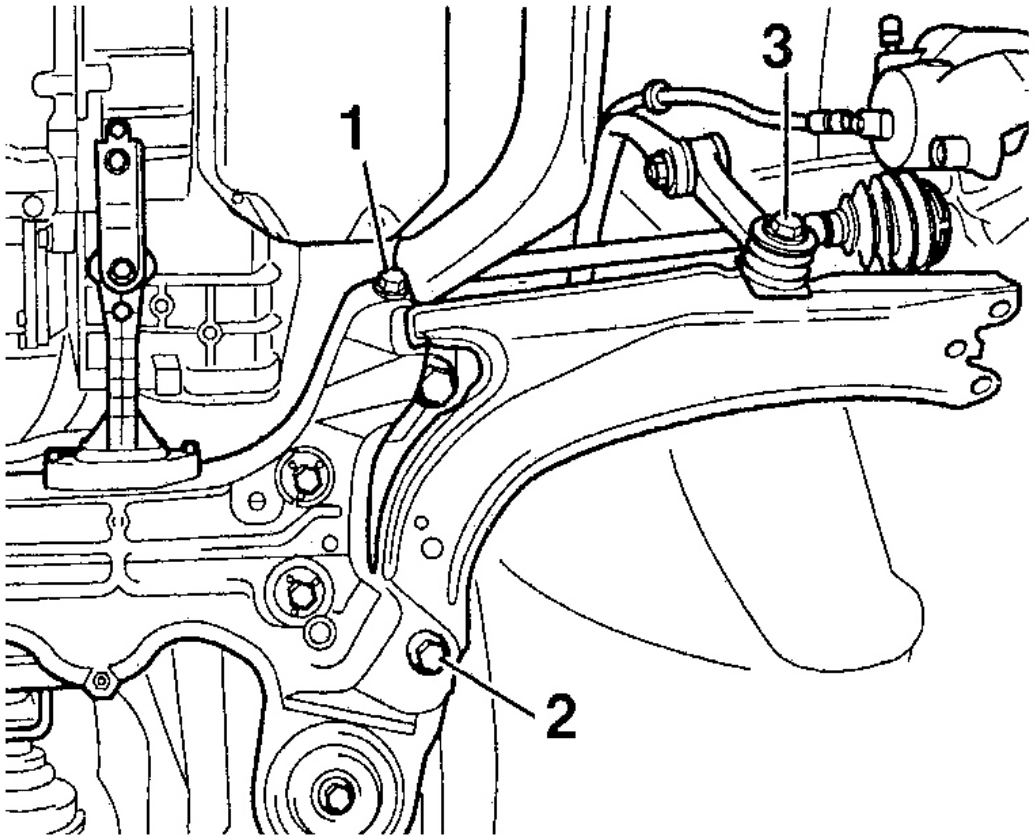


Fig. 10: Locating Lower Control Arm Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Installation

1. Install control arm to subframe. Install ball joint into steering knuckle.
2. Install new self-locking nut, and counter-hold with T40 Torx bit (1), ring wrench insert or slotted ring wrench insert (2) and VAG1331 (3). See **Fig. 11** . Install axle shaft. Secure ball joint to control arm (bolts on old marks) using NEW bolts.

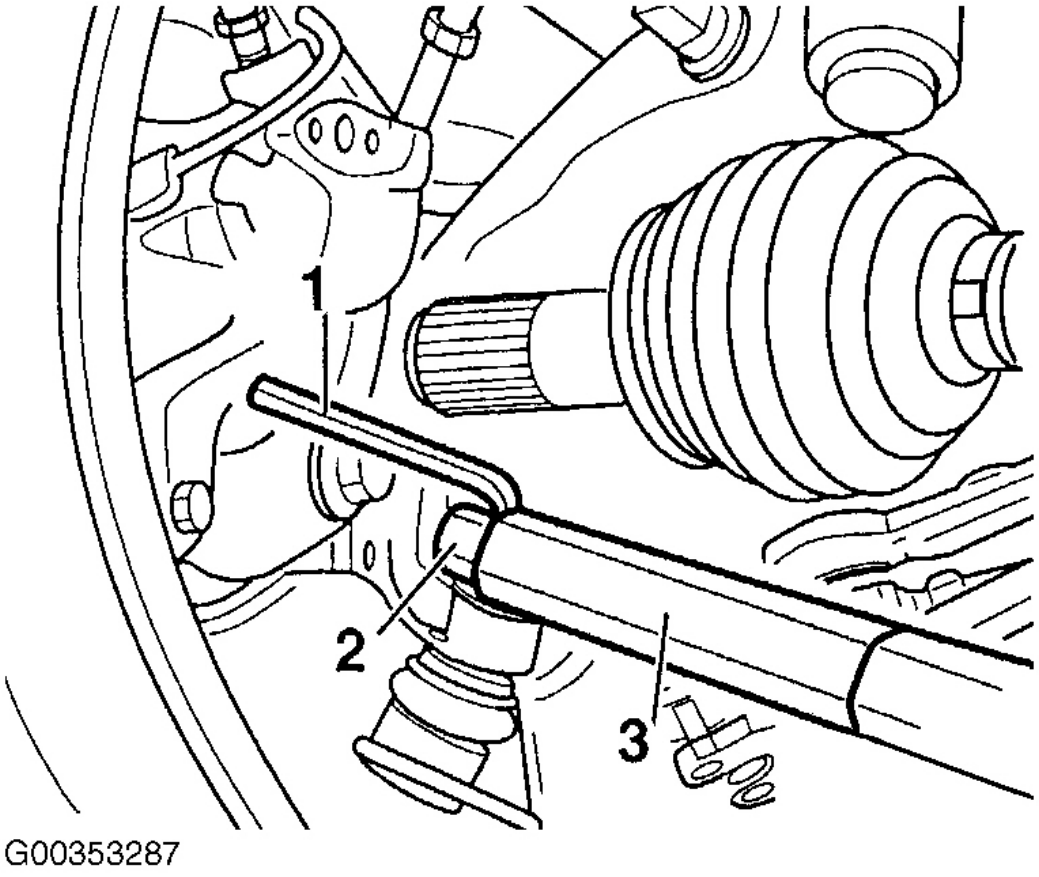


Fig. 11: Tightening Ball Joint Nut
Courtesy of VOLKSWAGEN UNITED STATES, INC.

3. To complete installation, reverse removal procedure. Tighten control arm bolts with vehicle on ground. Tighten all bolts and nuts to specification. See **TORQUE SPECIFICATIONS** . Check wheel alignment. See appropriate SPECIFICATIONS & PROCEDURES article in WHEEL ALIGNMENT.

LOWER CONTROL ARM BUSHINGS

Removal & Installation (Front Bushing)

1. Remove lower control arm. See **LOWER CONTROL ARM** .
2. Mount control arm in soft-jawed vise. Using appropriate bushing press tools, press bushing from control arm. See **Fig. 12** . See **SPECIAL TOOLS** .
3.

CAUTION: Never use grease as a lubricant for bushings.

Using appropriate press tools and bushing lubricant (G 294 421 A1), press NEW bushing into control arm. See **Fig. 12** .

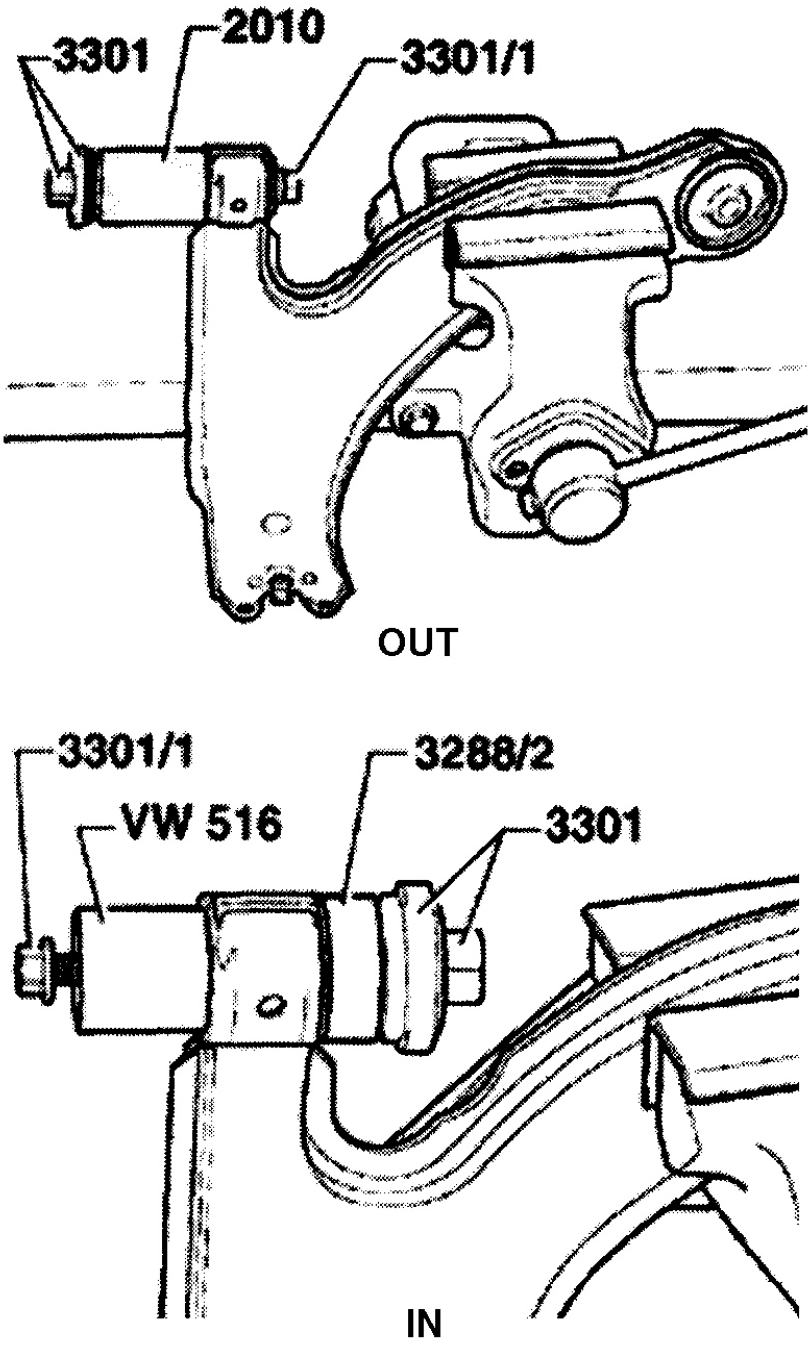


Fig. 12: Removing & Installing Front Lower Control Arm Bushing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Removal & Installation (Rear Bushing)

1. Remove lower control arm. See **LOWER CONTROL ARM** .
2. Using hydraulic press and appropriate bushing press tools, press bushing from control arm. See **Fig. 13** . See **SPECIAL TOOLS** .
3.

CAUTION: Never use grease as a lubricant for bushings.

Note proper installation position for bushing in control arm. See **Fig. 14** . Press NEW bushing using appropriate press tools into control arm. See **Fig. 13** .

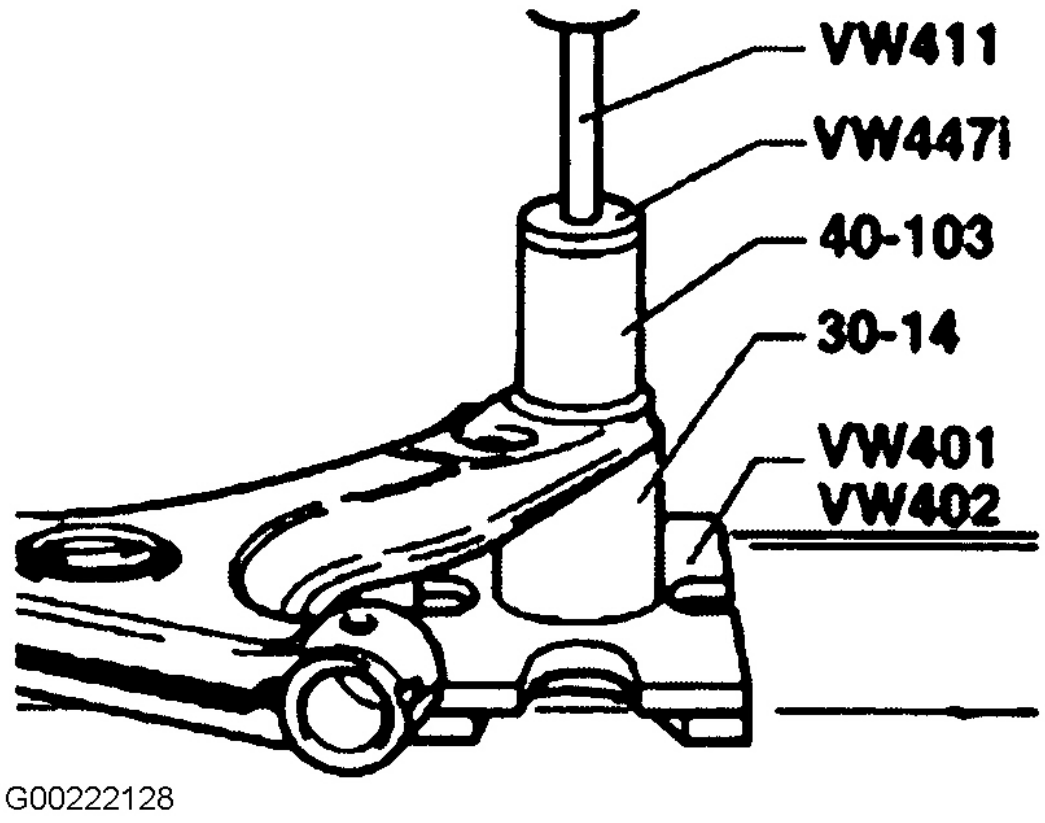


Fig. 13: Removing & Installing Rear Lower Control Arm Bushing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

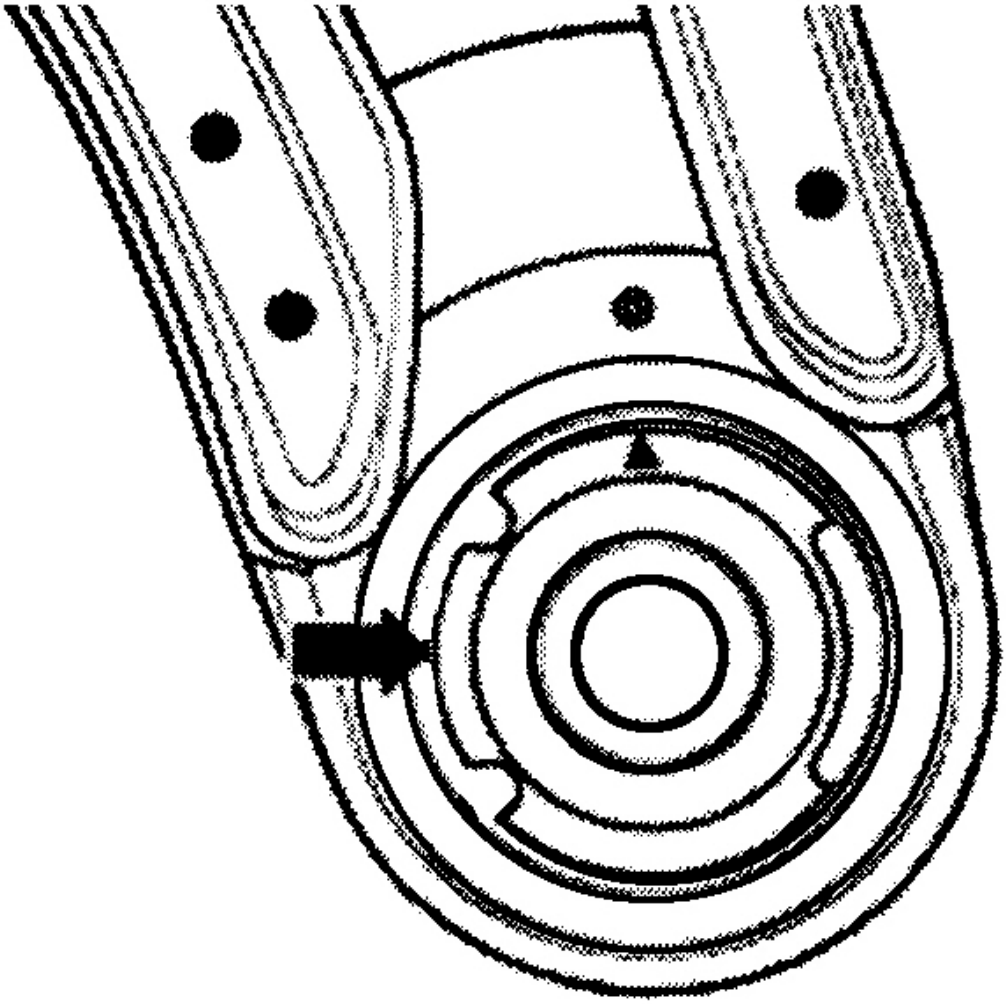


Fig. 14: Installation Position Of Rear Lower Control Arm Bushing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

STRUT ASSEMBLY

Removal (Except New Beetle)

1. Raise and support vehicle. Remove wheel.
2. For vehicles with brake wear pad indicator, disconnect connector (1). See **Fig. 15** .

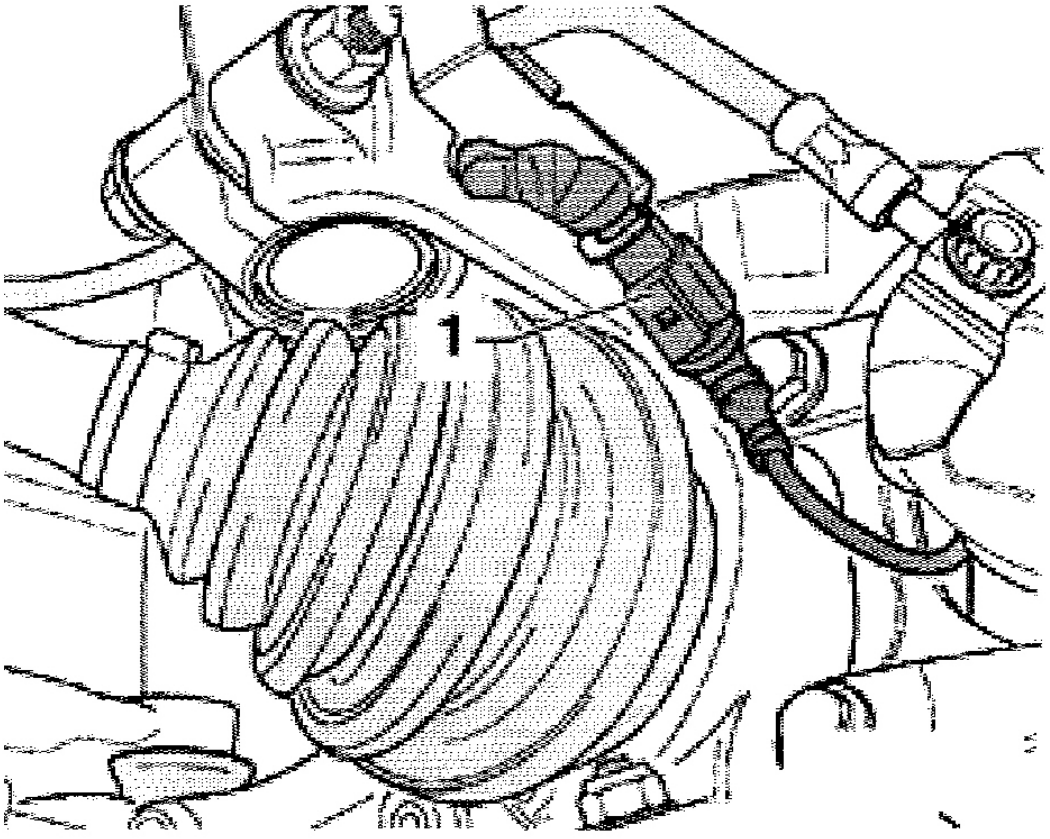


Fig. 15: Locating Brake Pad Wear Indicator
Courtesy of VOLKSWAGEN UNITED STATES, INC.

3. Remove heat shield (1) by pushing lip (A) with a screwdriver in, and push at the same time the heat shield (1) upward in direction of arrow. See **Fig. 16** . For vehicles with brake wear pad indicator remove bolt (B) to remove support for brake wear pad indicator.

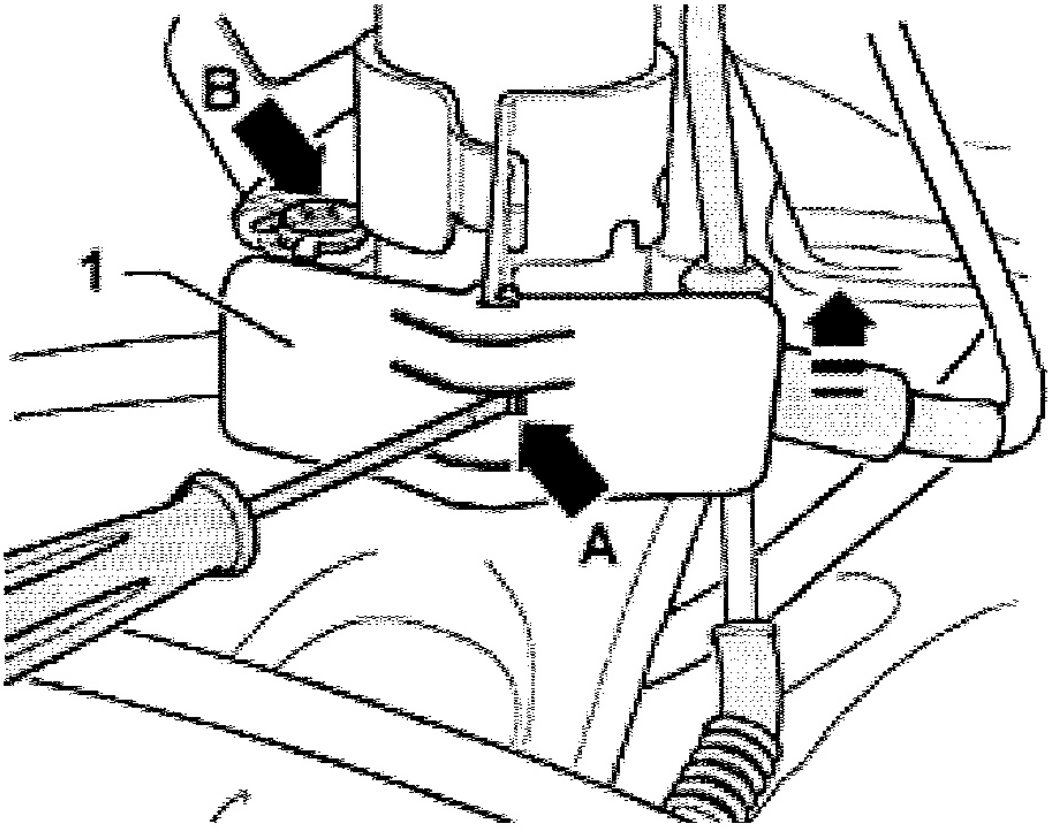


Fig. 16: Removing Strut Heat Shield
Courtesy of VOLKSWAGEN UNITED STATES, INC.

4. If equipped with modified stabilizer bar mounting, remove upper link nut. Unclip brake line clamp and release brake line. Unclip wheel speed sensor harness from strut. See **Fig. 17** .

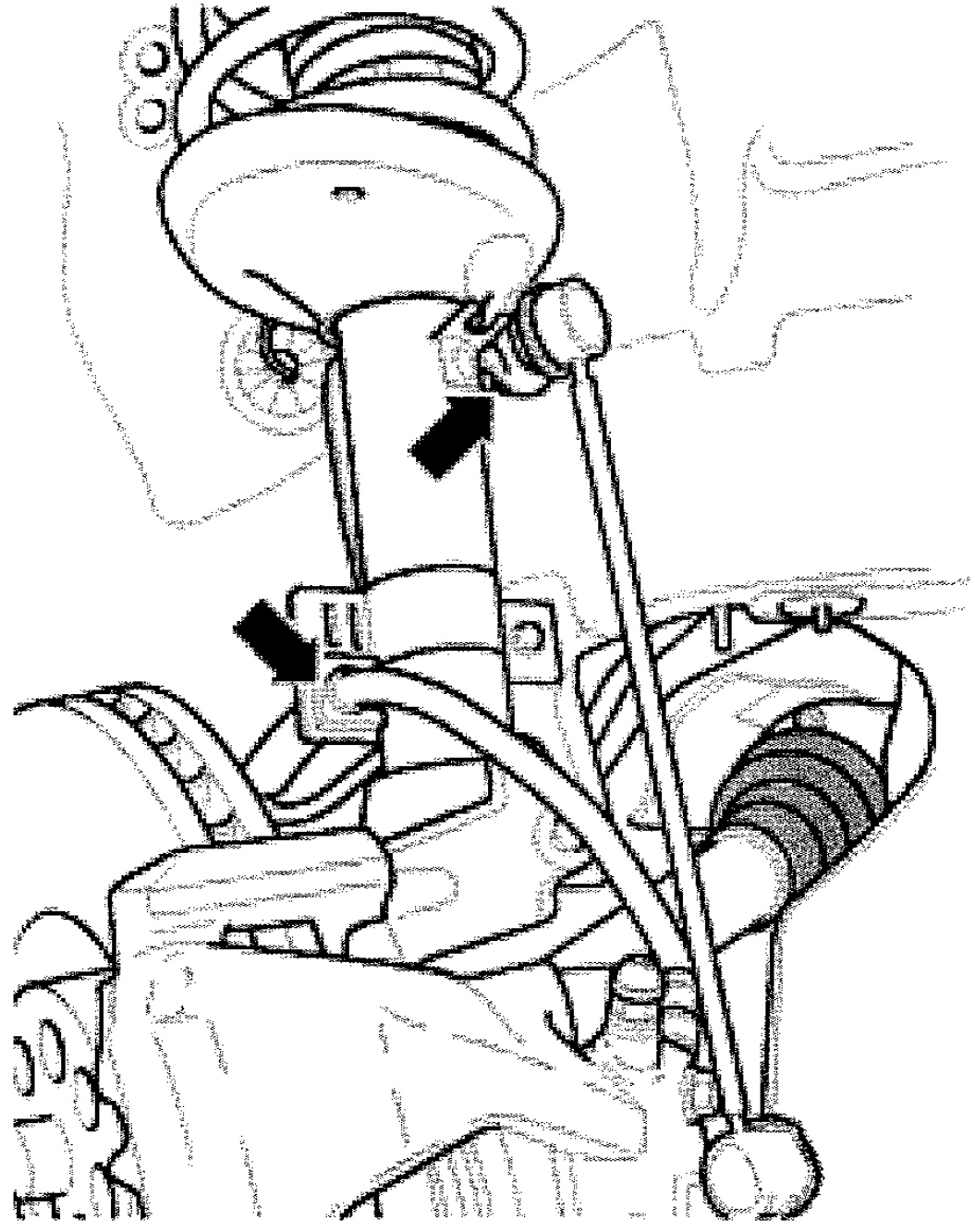


Fig. 17: Identifying Modified Stabilizer Bar Mounting (Golf, GTI & Jetta)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

5.

CAUTION: DO NOT allow caliper hang by brake hose.

On all models, disconnect and wire brake caliper aside without disconnecting brake hose. Support brake caliper with mechanics wire.

6. Remove connecting link from control arm. Release speed sensor wiring from suspension strut.
7. Additional work is required if right suspension strut is to be removed. Remove noise insulation. Disconnect axle shaft from transmission axle flange.
8. The following work sequence is valid for both sides Remove lower strut-to-wheel bearing housing bolt and nut. Insert Spreader (3424) into slot. See **Fig. 18** . See **SPECIAL TOOLS** . Using ratchet handle turn spreader 90°.

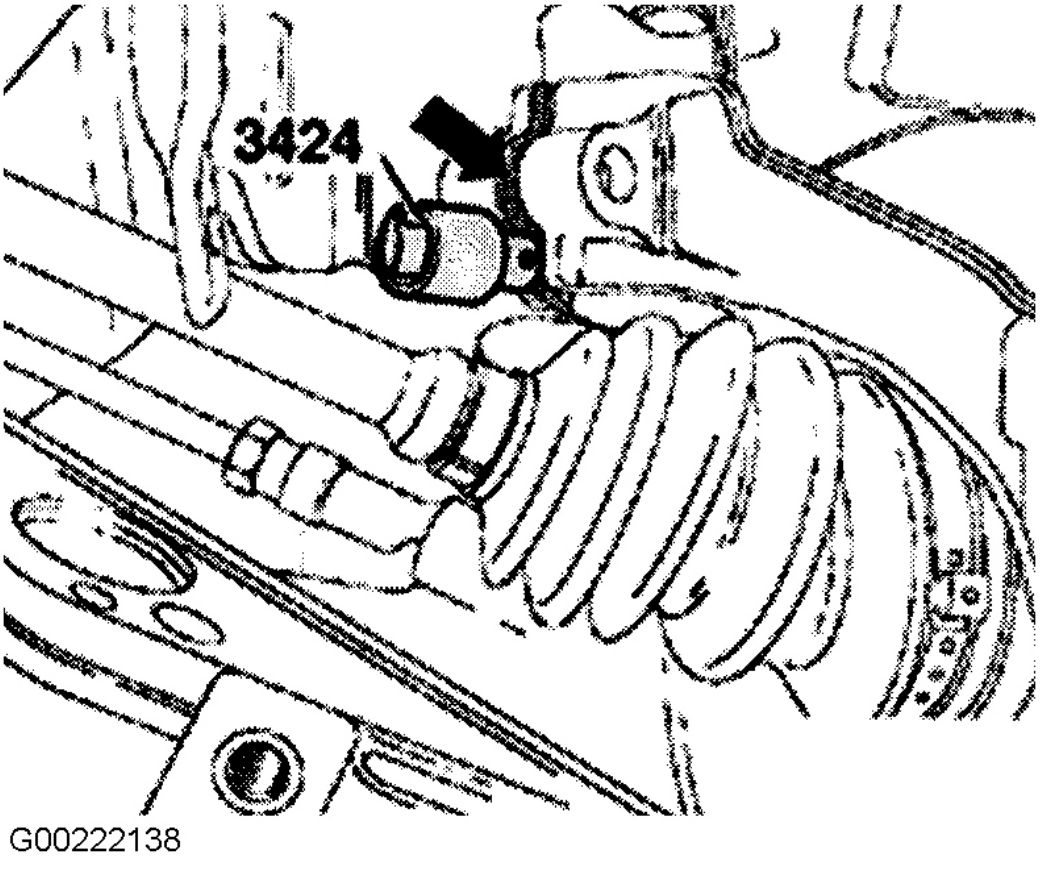


Fig. 18: Removing Strut Assembly From Housing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

9. Press brake disc in direction of suspension strut by hand. Otherwise the shock absorber tube could catch

in the wheel bearing housing hole. Pull wheel bearing housing off shock absorber downward.

10. Remove hex nut for upper shock absorber mounting (1) with ratchet handle and adapters (1 - Ratchet handle, 2 - T10001/8, 3 - T10001/11 and 4 - T10001/5). See **Fig. 19** . Remove suspension strut.

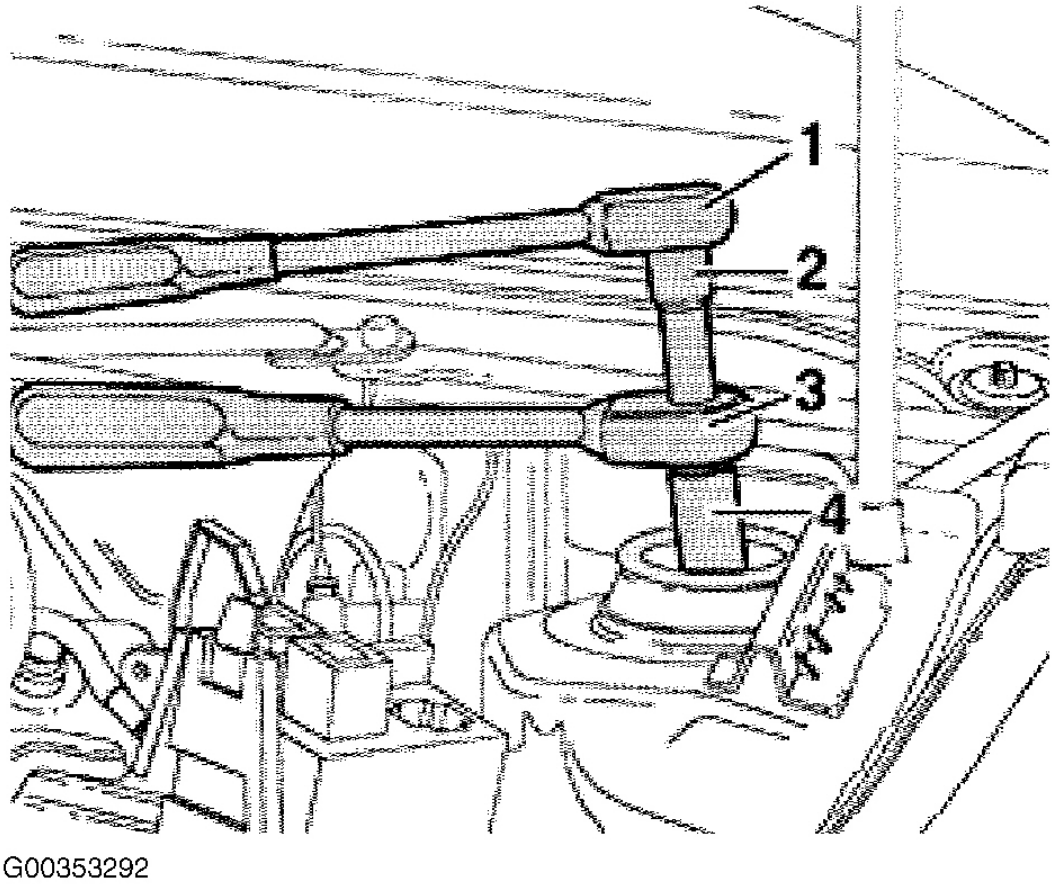


Fig. 19: Removing Hex Nut For Upper Shock Absorber Mounting (Golf, GTI & Jetta)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Installation (Except New Beetle)

To install, reverse removal procedure. Ensure that strut-to-wheel bearing housing bolt is installed with point installed towards front of vehicle. Tighten bolts and nuts to specification. See **TORQUE SPECIFICATIONS** . Check wheel alignment. See appropriate SPECIFICATIONS & PROCEDURES article in WHEEL ALIGNMENT.

Removal (New Beetle)

1. Raise and support vehicle. Remove wheel.

2. For vehicles with brake wear pad indicator, disconnect connector (1). See **Fig. 15** .
3. Remove heat shield (1) by pushing lip (A) with a screwdriver in, and push at the same time the heat shield (1) upward in direction of arrow. See **Fig. 16** . For vehicles with brake wear pad indicator remove bolt (B) to remove support for brake wear pad indicator.
4.

CAUTION: DO NOT allow caliper hang by brake hose.

On all models, disconnect and wire brake caliper aside without disconnecting brake hose. Support brake caliper with mechanics wire.

5. Remove connecting link from control arm. Release speed sensor wiring from suspension strut.
6. To remove right-side strut, remove noise insulation panel.
7. On vehicles equipped with 1.9L TDI engines, remove noise insulation panel under engine. See **Fig. 23** . Remove intake air duct between charge air cooler and turbocharger.
8. On vehicles with 1.8L turbo and 2.0L engines, remove center, left and right insulation trays. See **Fig. 20** . On vehicles with 1.9L TDI and 1.8L turbo engine, remove intake air duct between charge air cooler and turbocharger.

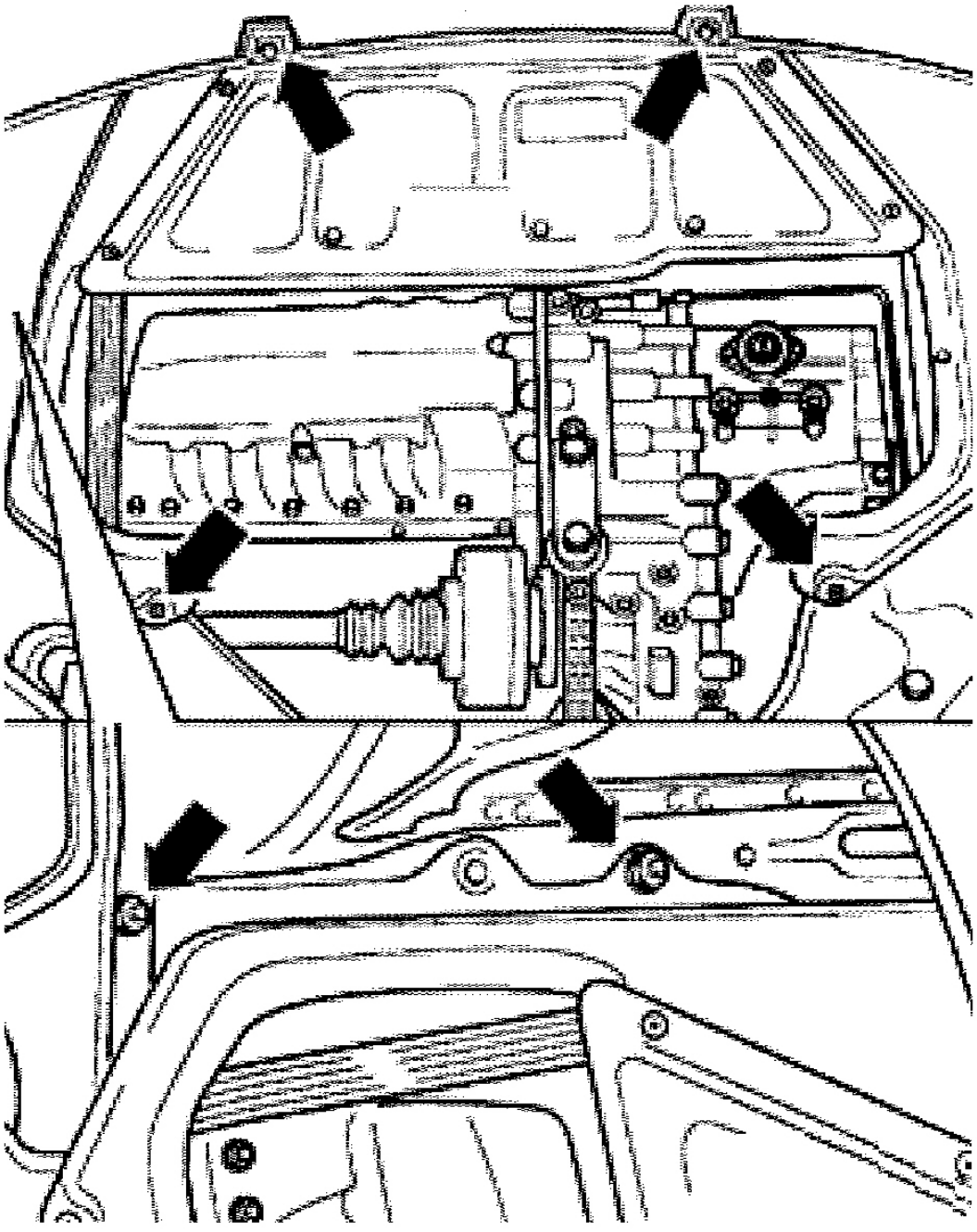


Fig. 20: Locating Center, Left & Right Insulation Tray (New Beetle)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

9. On all vehicles, remove axle shaft-to-drive flange bolts. Remove right-side noise insulation.

10. Remove lower strut-to-wheel bearing housing bolt and nut. Insert Spreader (3424) into slot. See **Fig. 18** . See **SPECIAL TOOLS** . Using ratchet handle turn spreader 90°. Press brake disc in direction of suspension strut by hand. Otherwise the shock absorber tube can cant in wheel bearing housing hole. Pull wheel bearing housing from shock absorber downward.
11. Remove wiper arms. Remove plenum chamber cover. Remove hex nut for upper shock absorber mounting (1) with ratchet handle and adapters (1 - Ratchet handle, 2 - T10001/8, 3 - T10001/11 and 4 - T10001/5). Remove strut from vehicle.

Installation (New Beetle)

To install, reverse removal procedure. Ensure that strut-to-wheel bearing housing bolt is installed with point installed towards front of vehicle. Tighten bolts and nuts to specification. See **TORQUE SPECIFICATIONS** . Check wheel alignment. See appropriate SPECIFICATIONS & PROCEDURES article in WHEEL ALIGNMENT.

SUBFRAME

Removal (Except New Beetle)

1. Raise and support vehicle. Remove wheel. Remove sound insulation panel. Mark position of ball joint to lower control arm. Remove 3 ball joint-to-lower control arm bolts.
2. **NOTE: Do NOT allow axle shaft to hang free.**

   Remove axle shaft-to-drive flange bolts. Pull wheel bearing housing with ball joint outwards from control arm. Swing wheel with suspension strut outward and support with a piece of wood placed between strut and body.
3. Remove pendulum support-to-subframe bolts (1) and (2). See **Fig. 21** . Remove steering gear bolts (5). Remove stabilizer bar link rod nuts (7). On vehicles equipped with 1.9L TDI engines, remove exhaust system bolts (6).
4. Support suspension assembly with transmission jack. Remove subframe bolts (3) and (4). Lower subframe and remove from vehicle.

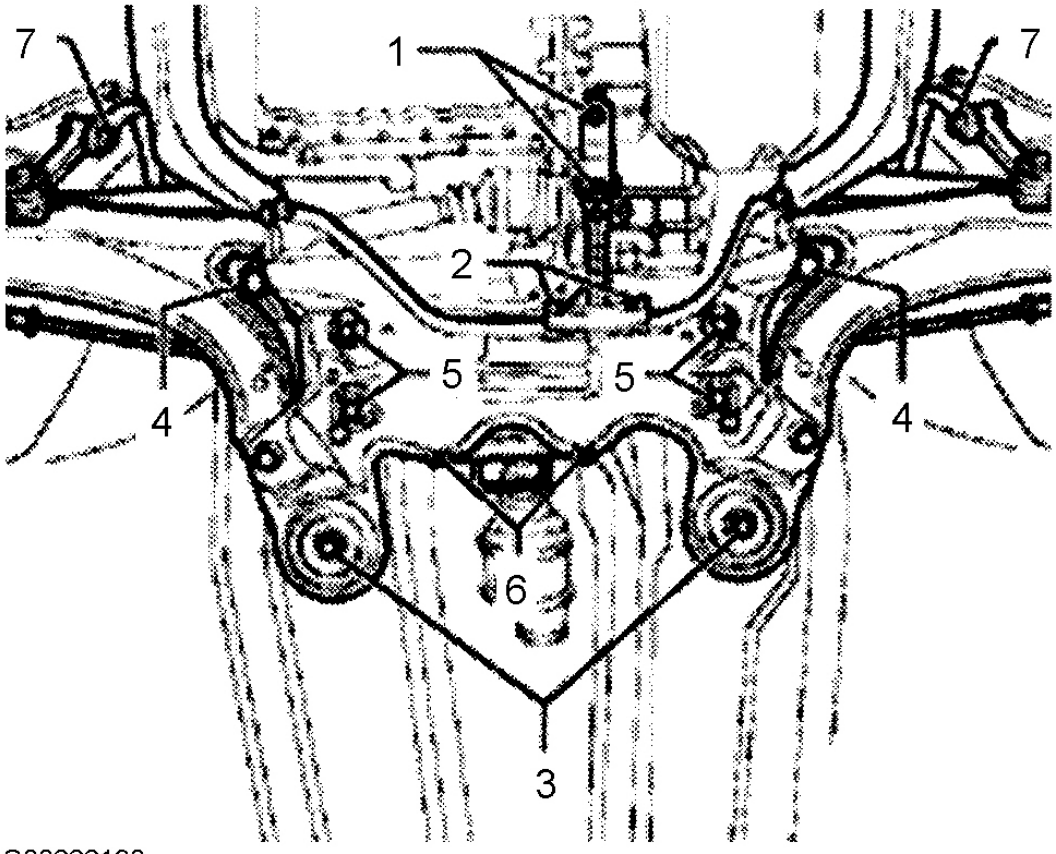


Fig. 21: Locating Subframe Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Installation (Except New Beetle)

1. Before inserting bolts for subframe, position steering gear on subframe and insert bolts for steering gear. The threaded sleeve (1) must seat in subframe hole. See **Fig. 22** .

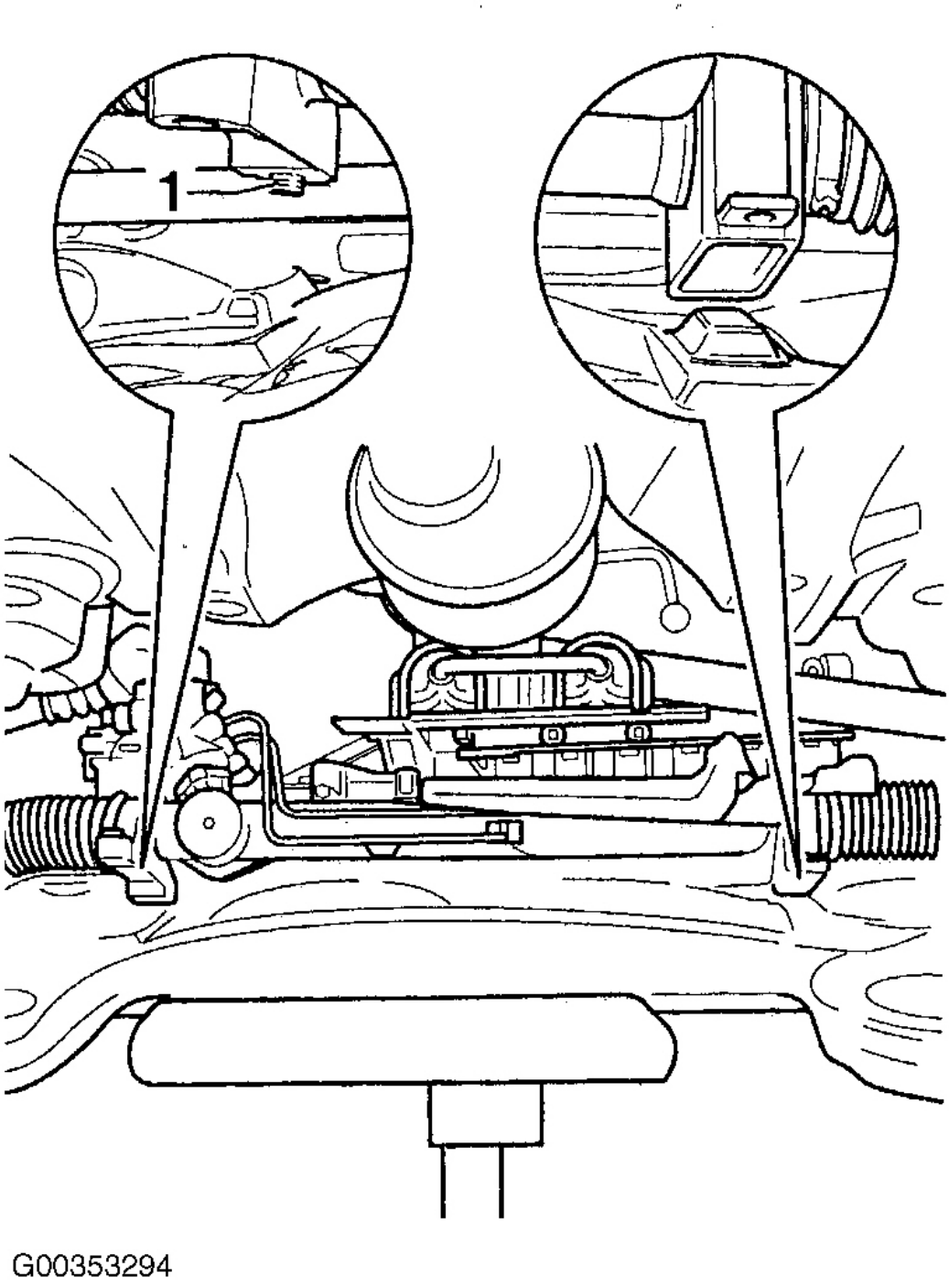


Fig. 22: Positioning Subframe In Body
Courtesy of VOLKSWAGEN UNITED STATES, INC.

2. Further installation is in reverse order. After installing, check position of steering wheel during a test drive. If steering wheel is not in straight ahead position the front axle alignment must be checked.
3. Tighten bolts and nuts to specification. See **TORQUE SPECIFICATIONS** . Check wheel alignment. See appropriate SPECIFICATIONS & PROCEDURES article in WHEEL ALIGNMENT.

Removal (New Beetle)

CAUTION: The vehicle must be standing on its wheels when loosening or tightening the 12-point nut. Otherwise there is risk of an accident.

1. Lift vehicle until load on front axle is relieved. Loosen right-side 12-point axle shaft nut. Remove wheel. For vehicles with 1.9L TDI engine, remove noise insulation panel. See **Fig. 23** . Remove left-side noise insulation panel. See **Fig. 24** .

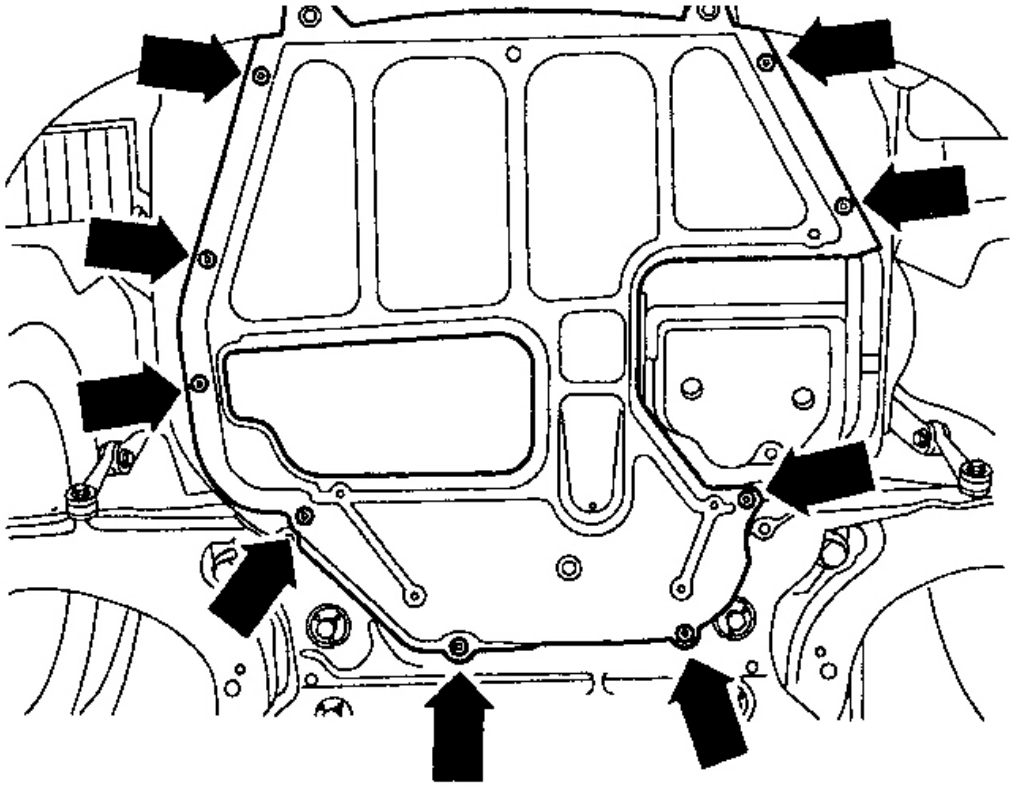


Fig. 23: Locating Noise Insulation Panel (New Beetle)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

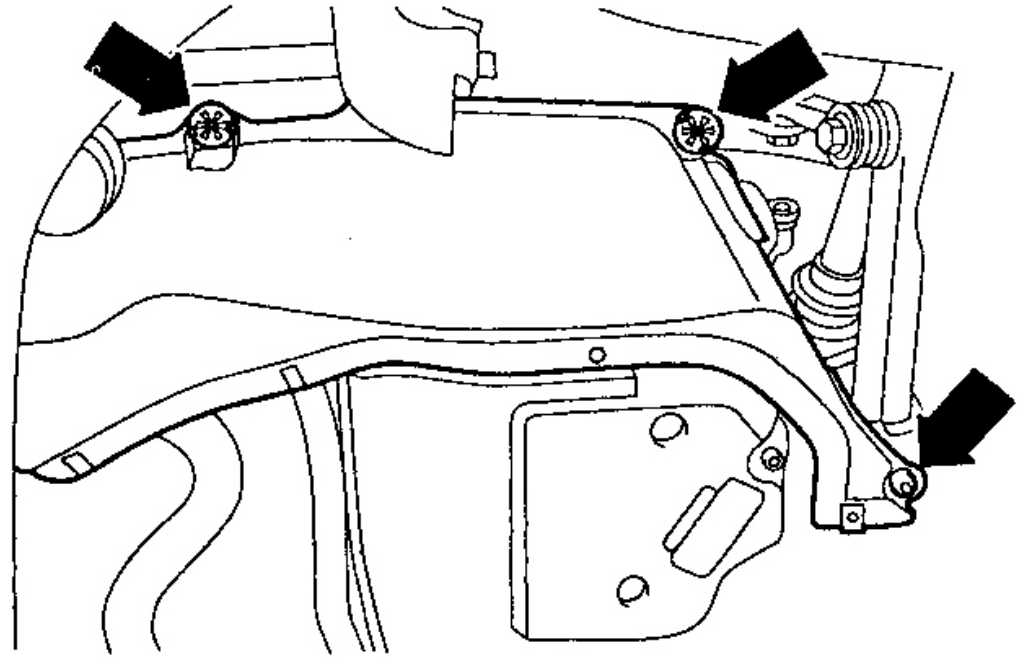


Fig. 24: Locating Left Side Noise Insulation Panel (New Beetle)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

2. On vehicles with 1.8L turbo and 2.0L engines, remove center, left and right insulation trays. See **Fig. 20** . On vehicles with 1.9L TDI and 1.8L turbo engines, remove intake air duct between charge air cooler and turbocharger.
3. Continuation for all vehicles, remove right-side noise insulation. Mark installation position of ball joint bolts on control arm. Remove ball joint-to-control arm bolts.
4. **NOTE: When pressing drive axle out make sure that sufficient clearance is available.**

   Install tool 3283. See **Fig. 5** . Press axle shaft out of hub. Pull wheel bearing housing together with ball joint out from control arm. Swing suspension strut outward and hold away from body with a piece of wood. To do this pull the drive shaft out from wheel bearing.
5. Secure drive axle to body with wire. The drive axle must not hang down by inner CV or triple rotor joint. Do not flex inner CV or triple-rotor joint more than 25 degrees from its original angle. The inner joint will otherwise be damaged through overflexing.
6. Remove pendulum support-to-subframe bolts (1) and (2). See **Fig. 21** . Remove steering gear bolts (5).

Remove stabilizer bar link rod nuts (7). On vehicles equipped with 1.9L TDI engines, remove exhaust system bolts (6).

7. Support suspension assembly with transmission jack. Remove subframe bolts (3) and (4). Lower subframe and remove from vehicle.

Installation (New Beetle)

1. Before inserting bolts for subframe, position steering gear on subframe and insert bolts for steering gear. The threaded sleeve (1) must seat in subframe hole. See **Fig. 22** .
2. Further installation is in reverse order. After installing, check position of steering wheel during a test drive. If steering wheel is not in straight ahead position the front axle alignment must be checked.
3. Tighten bolts and nuts to specification. See **TORQUE SPECIFICATIONS** . Check wheel alignment. See appropriate SPECIFICATIONS & PROCEDURES article in WHEEL ALIGNMENT.

SUBFRAME BUSHINGS

Removal & Installation

1. Remove subframe. See **SUBFRAME** . Using hydraulic press and appropriate bushing press tools, press bushing from subframe. See **Fig. 25** . See **SPECIAL TOOLS** .
2.

CAUTION: Never use grease as a lubricant for bushings.

Coat new bushings with Bushing Lubricant (G 294 421). Using appropriate press tools, press NEW bushings into control arm.

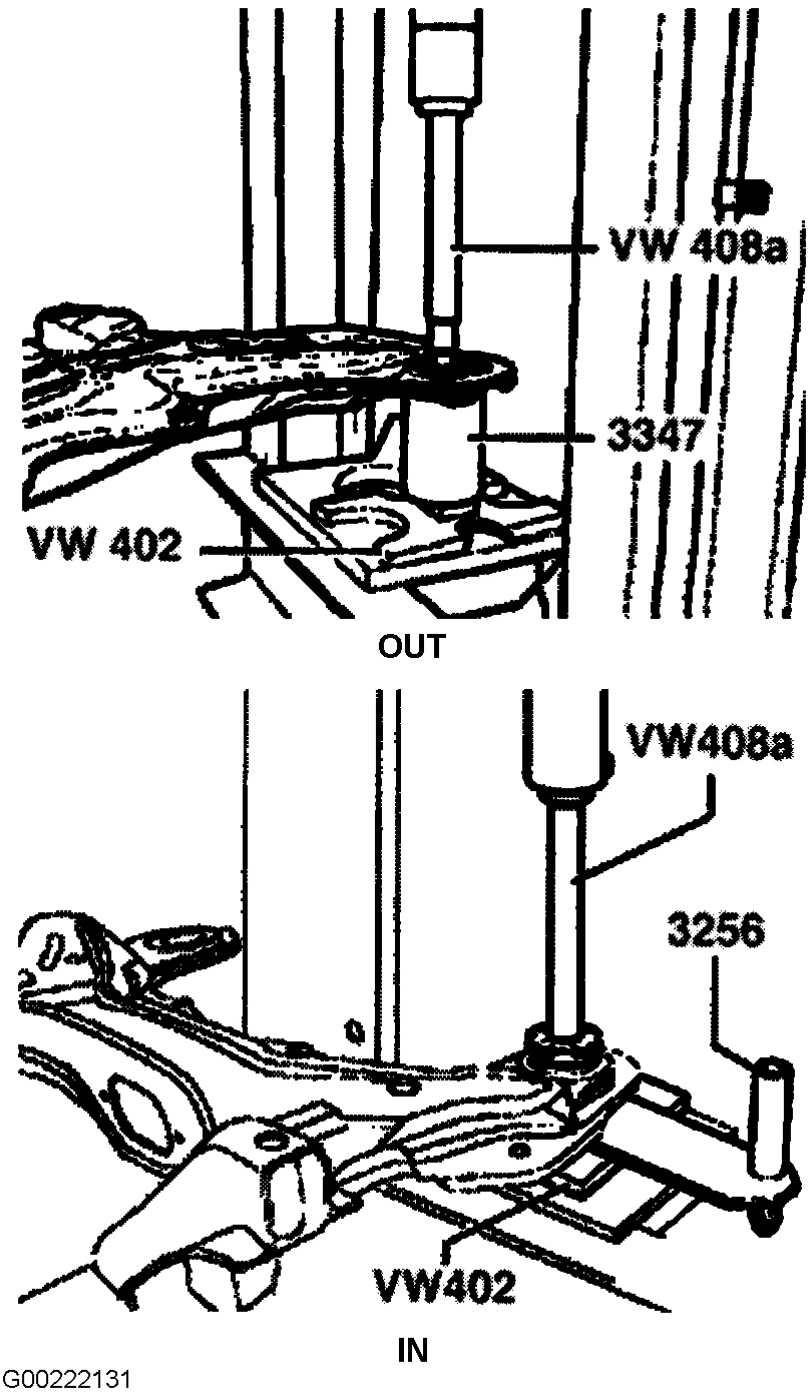


Fig. 25: Removing & Installing Subframe Bushings
Courtesy of VOLKSWAGEN UNITED STATES, INC.

WHEEL BEARING (WHEEL BEARING HOUSING REMOVED FROM VEHICLE)

NOTE: **Wheel bearing MUST be replaced if removed, as removal will damage it. During any removal and installation procedure, if axle nut/bolt is removed or installed, do so with vehicle resting on floor at full curb weight. Always replace axle shaft self-locking nut/bolt with NEW.**

Removal

1. Remove wheel bearing housing/hub assembly.
2. Using hydraulic press and appropriate wheel hub press tools, press wheel hub from wheel bearing. See **Fig. 26** . See **SPECIAL TOOLS** . Using appropriate puller, remove inner race from hub.

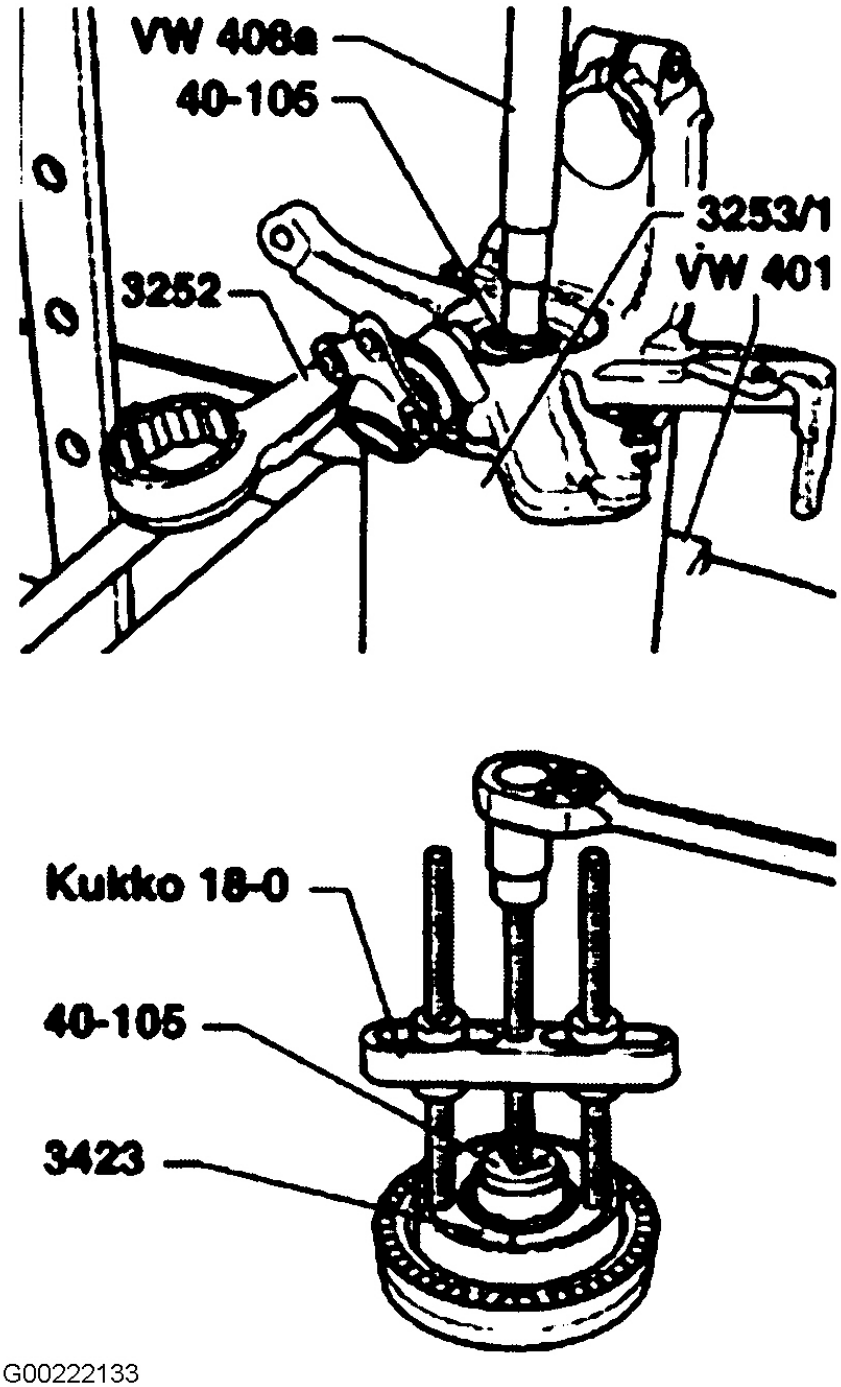


Fig. 26: Pressing Wheel Hub From Bearing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

3. Remove wheel bearing circlip. Using appropriate wheel bearing press tools, press wheel bearing out of

steering knuckle. See **Fig. 27** .

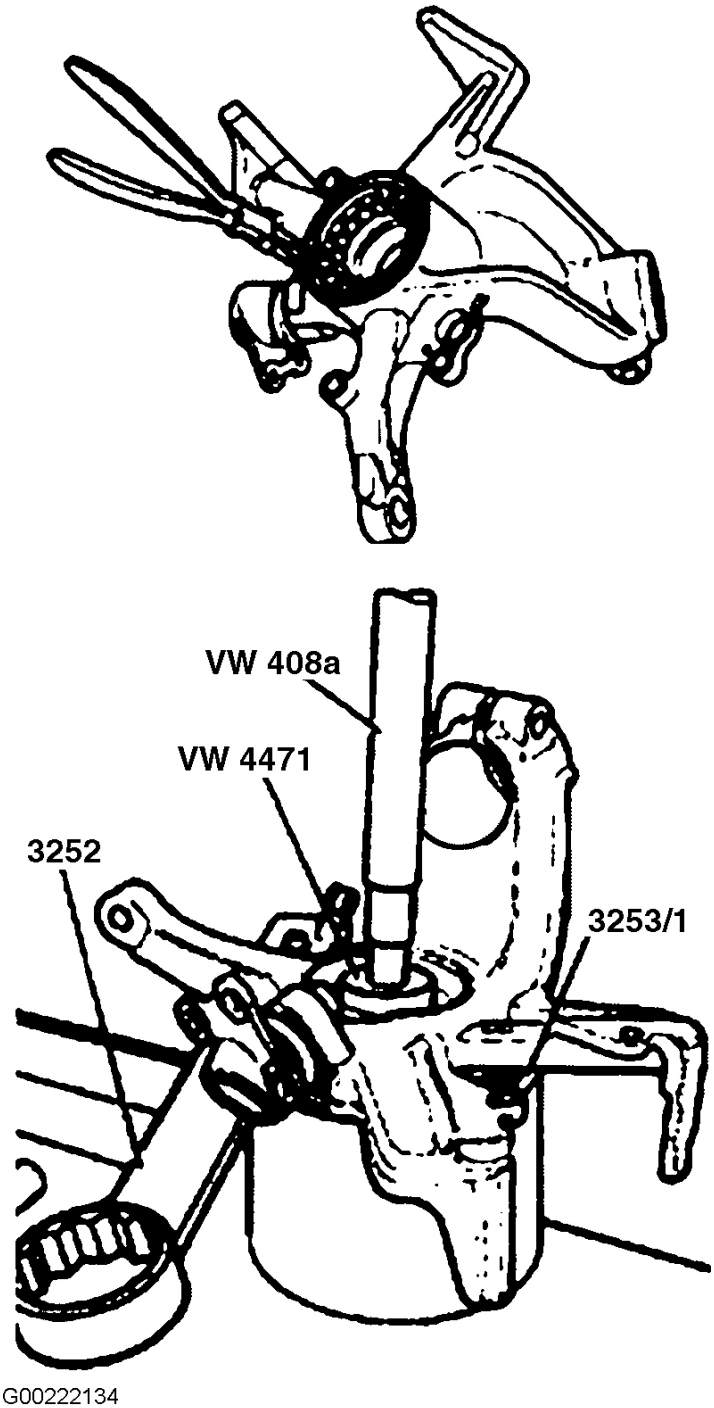


Fig. 27: Removing Wheel Bearing From Housing (Housing Removed From Vehicle)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Installation

NOTE: When installing hub, ensure press adapter contacts inner bearing race only.

1. Coat inside of wheel bearing housing with Molykote Grease (723 00). Using appropriate press tools, press new wheel bearing onto housing from outboard side. See **Fig. 28** . Install wheel bearing circlip.
2. Using same installer and adapter, press wheel hub into steering knuckle.

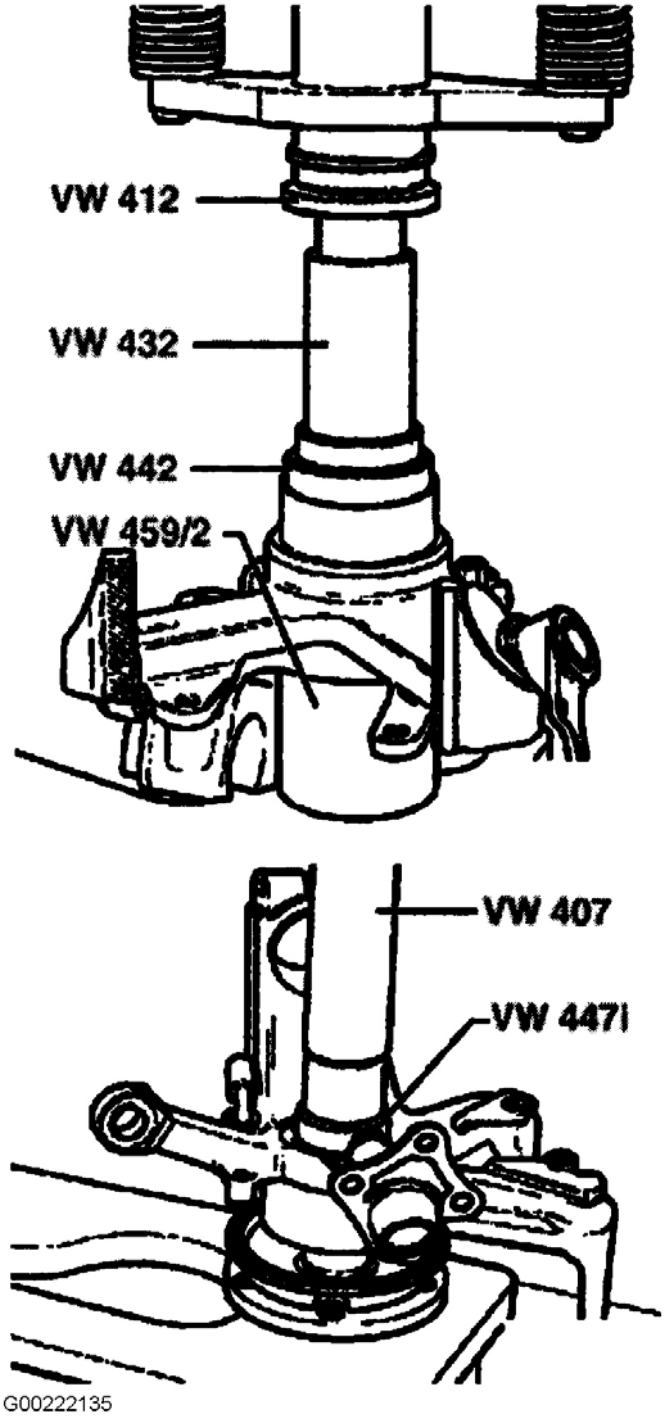


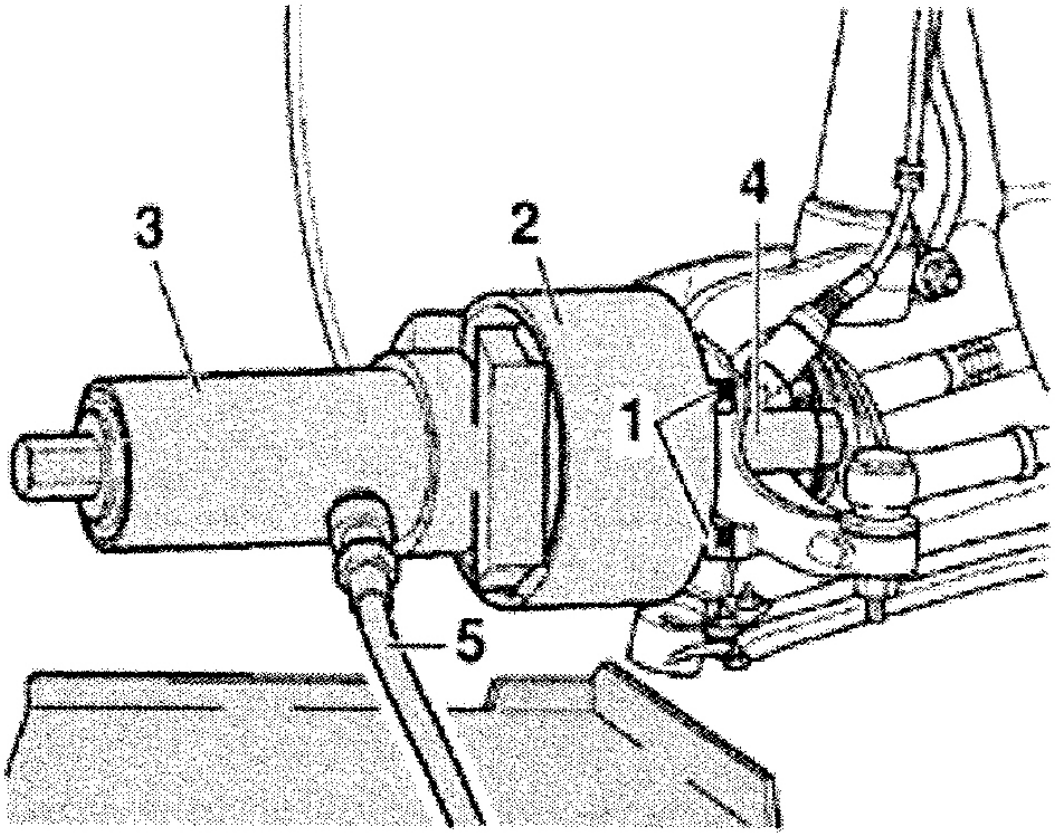
Fig. 28: Installing Wheel Bearing (Housing Removed From Vehicle)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

WHEEL BEARING (WHEEL BEARING HOUSING INSTALLED IN VEHICLE)

Removal

1. Lift vehicle until the load on the front axle is relieved. Loosen 12-point nut/bolt. Lift vehicle to installing height. Remove wheel.
2. The following steps are necessary only for vehicles with modified stabilizer bar mounting. Loosen upper hex nuts of connecting links from left and right suspension strut. See **Fig. 17** . Pull out clamp on brake hose bracket and release brake hose. Release speed sensor wiring from front suspension strut.
3. On all models, remove brake carrier with brake caliper. To do this remove brake caliper and hang up with wire or similar. Mark installation position of bolts from ball joint to control arm. Remove ball joint bolts from lower control arm.
4. Press axle shaft out of wheel hub. See **Fig. 5** . When pressing axle shaft out ensure sufficient clearance is available. Pull wheel bearing housing with ball joint out from control arm. Remove axle shaft from wheel bearing housing and tie up. The axle shaft must not hang down! The inner CV joint will be damaged through overflexing.
5. **CAUTION: Place engine/transmission jack (V.A.G1383/A, or equivalent) underneath (danger of accident from falling parts when removing the wheel hub and the wheel bearing).**

   Remove Phillips-head screw for brake disc and take out brake disc. Remove cover plate. Remove stabilizer bar connecting link from control arm. Release speed sensor wiring from suspension strut.
6. To pull wheel hub, insert thrust bolts (1) into wheel bearing housing. See **Fig. 29** . Install support (2), hollow piston cylinder (3) with pull rod and special nut (4). Holding puller firmly, pull wheel hub out.



1 - Thrust bolt E-15

2 - Support E-40

3 - Hollow piston cylinder HKZ-15

4 - Special nut E-8-214 and pull rod

5 - High pressure hose with quick release coupling

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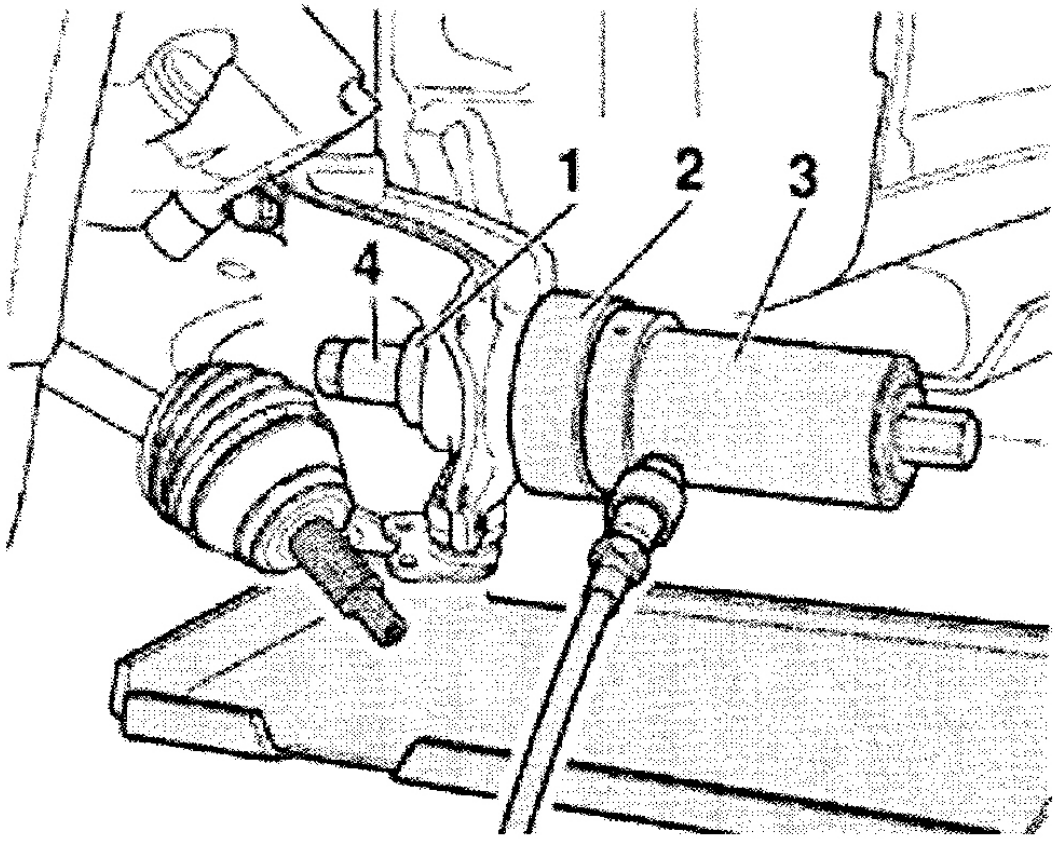
Fig. 29: Pulling Wheel Hub From Wheel Bearing Housing (Housing Installed In Vehicle)

Courtesy of VOLKSWAGEN UNITED STATES, INC.

7. To pull wheel bearing, remove circlip. Set thrust piece (1) with collar facing wheel bearing, press sleeve (2) with four internal stepped diameters toward wheel bearing housing, and hollow piston cylinder (3), with pull rod and special nut (4). See **Fig. 30** . Operate pump and pull out wheel bearing.



1 - Thrust piece E-5

2 - Press sleeve E-65-1

3 - Hollow piston cylinder HKZ-15

4 - Special nut E-8-214 and pull rod

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Fig. 30: Pulling Wheel Bearing From Wheel Hub

Courtesy of VOLKSWAGEN UNITED STATES, INC.

8. Using appropriate wheel bearing press tools, press wheel bearing inner race from hub. See **Fig. 31** .

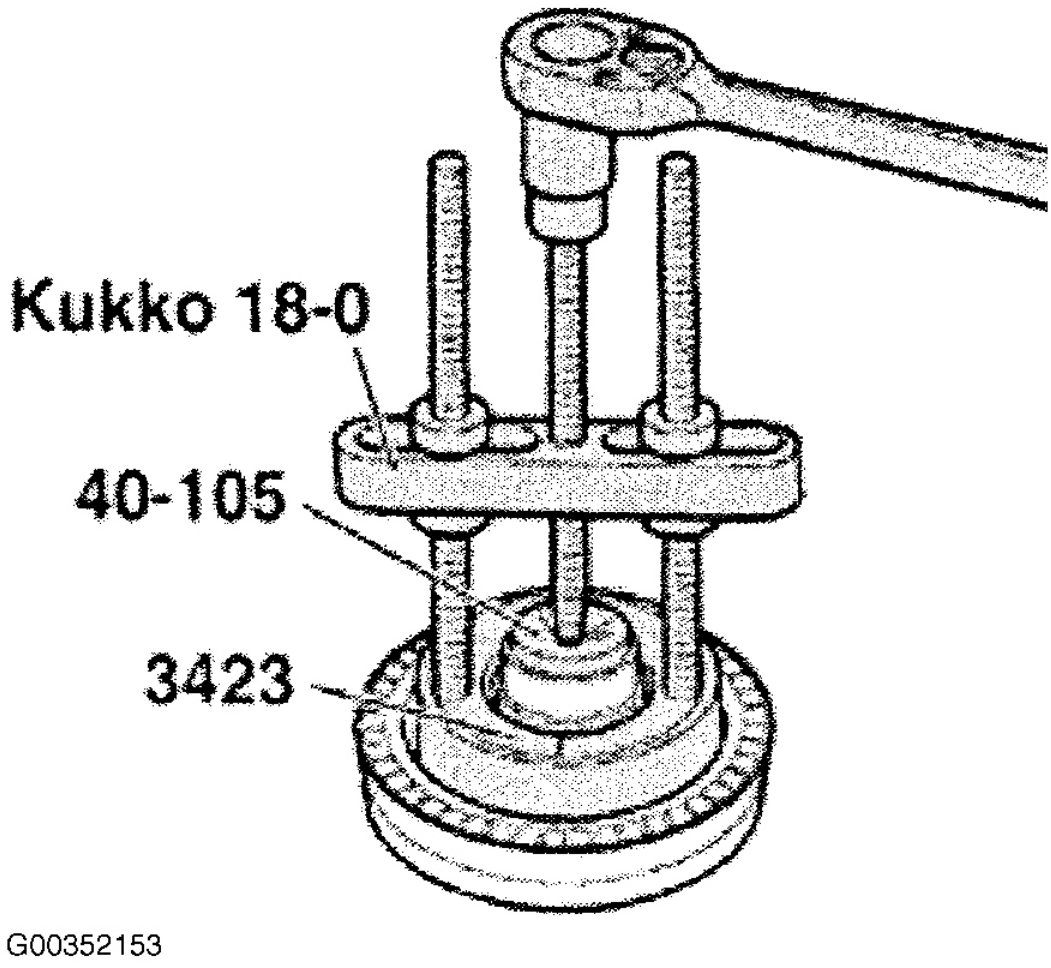


Fig. 31: Pressing Wheel Bearing Inner Race
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Installation

1. Clean hole from wheel bearing housing. Completely grease hole with Molykote grease (G 052 723 A2). Use grease packet from repair kit.
2. Install wheel bearing (1), press piece (2) (install with collar in bearing) and piston cylinder (3) with pull rod on wheel bearing housing. See **Fig. 32** . Install thrust piece (4) with wide collar toward wheel bearing housing and special nut (5) on inside. Press wheel bearing in by operating pump. Insert circlip with needle nose pliers.

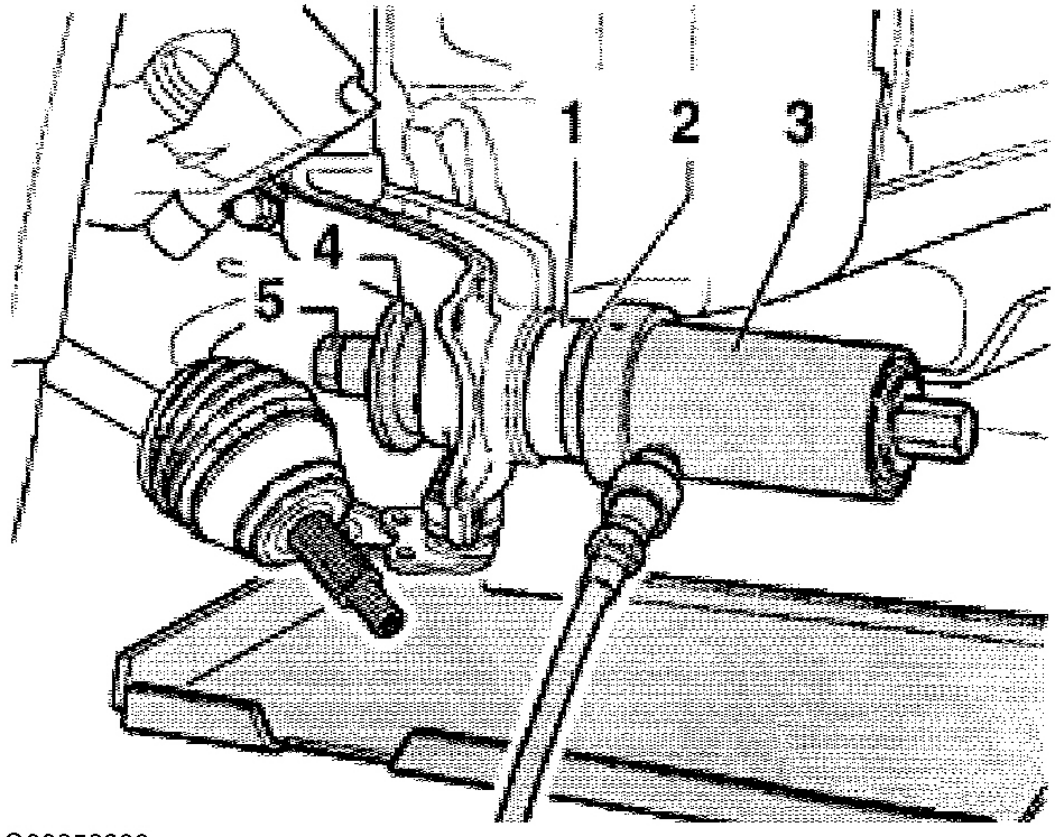


Fig. 32: Pressing Wheel Bearing Into Housing (Housing Installed In Vehicle)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

3. Install hub (1) and piston cylinder (2) with pull rod on wheel bearing. Install special nut (4) and thrust piece (3) (with collar toward special nut) on inside. Press in hub by operating the pump. Further installation is in the reverse sequence to removal.

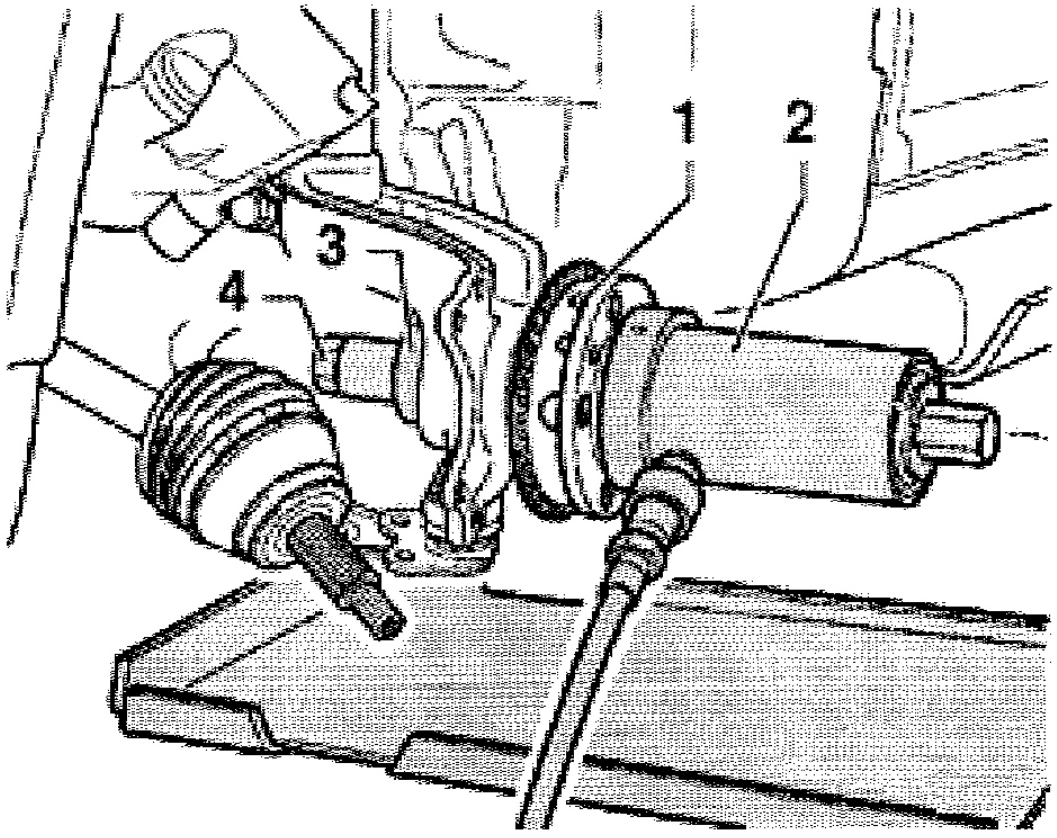


Fig. 33: Pressing Wheel Hub Into Housing (Housing Installed In Vehicle)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

OVERHAUL

STRUT ASSEMBLY

Disassembly & Reassembly (All Models)

1. Mount strut to strut holder or soft-jawed vise. Compress coil spring with Spring Compressor (VAG 1752/1) and Adapters (VAG 1752/4) until upper spring retainer is free. Remove piston rod nut using ratchet (1), 2 - T10001/8, 3 - T10001/11, 4 - T10001/5, 5 - Spring tensioner and 6 - Bracket V.A.G1752/4. Counter-hold piston rod as necessary. See **Fig. 34** .

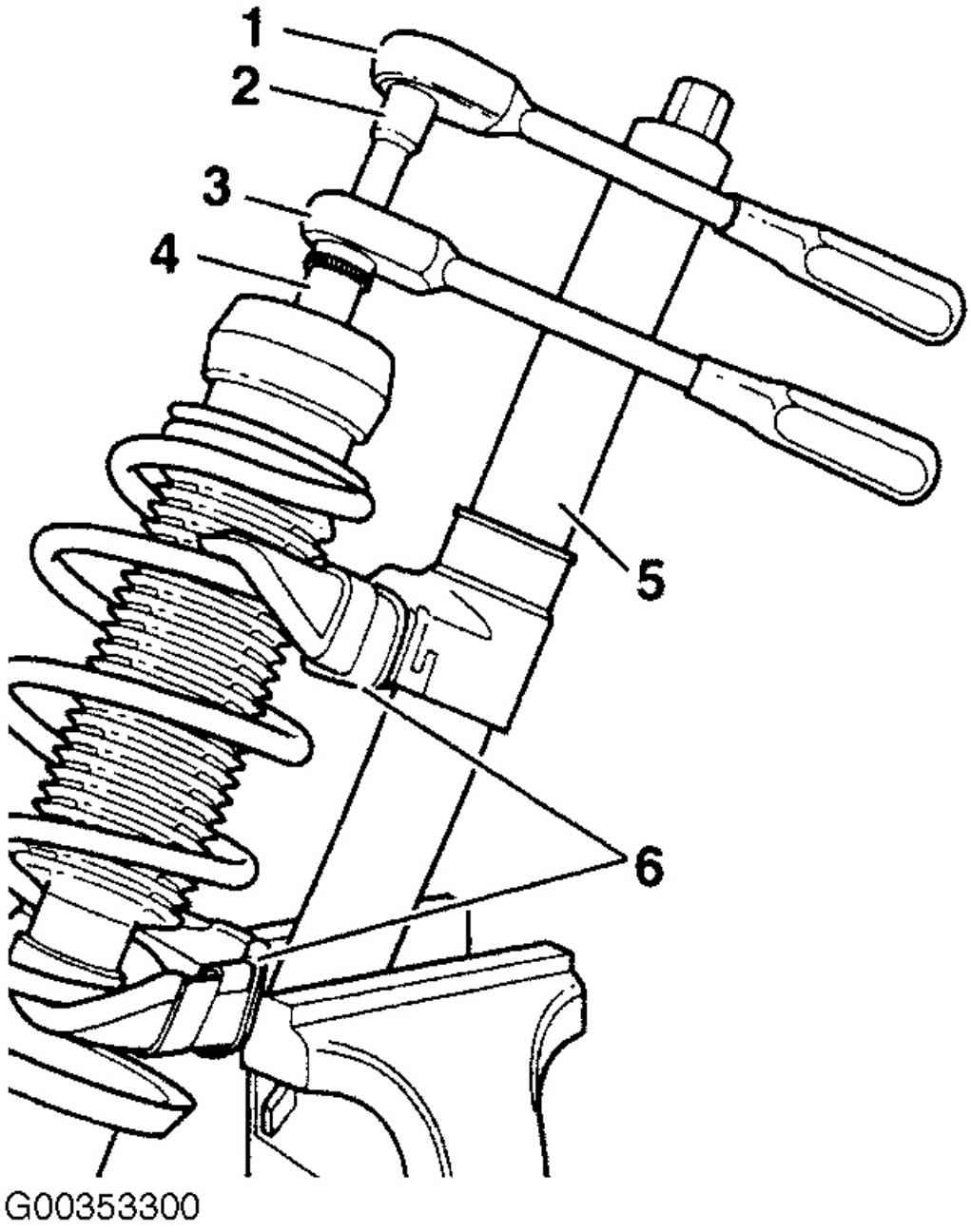


Fig. 34: Compressing Coil Spring
Courtesy of VOLKSWAGEN UNITED STATES, INC.

2.

CAUTION: First compress the spring until the upper spring plate is no longer under load.

Make sure that the coil spring is properly seated in spring holder V.A.G1752/4. See **Fig. 35** .

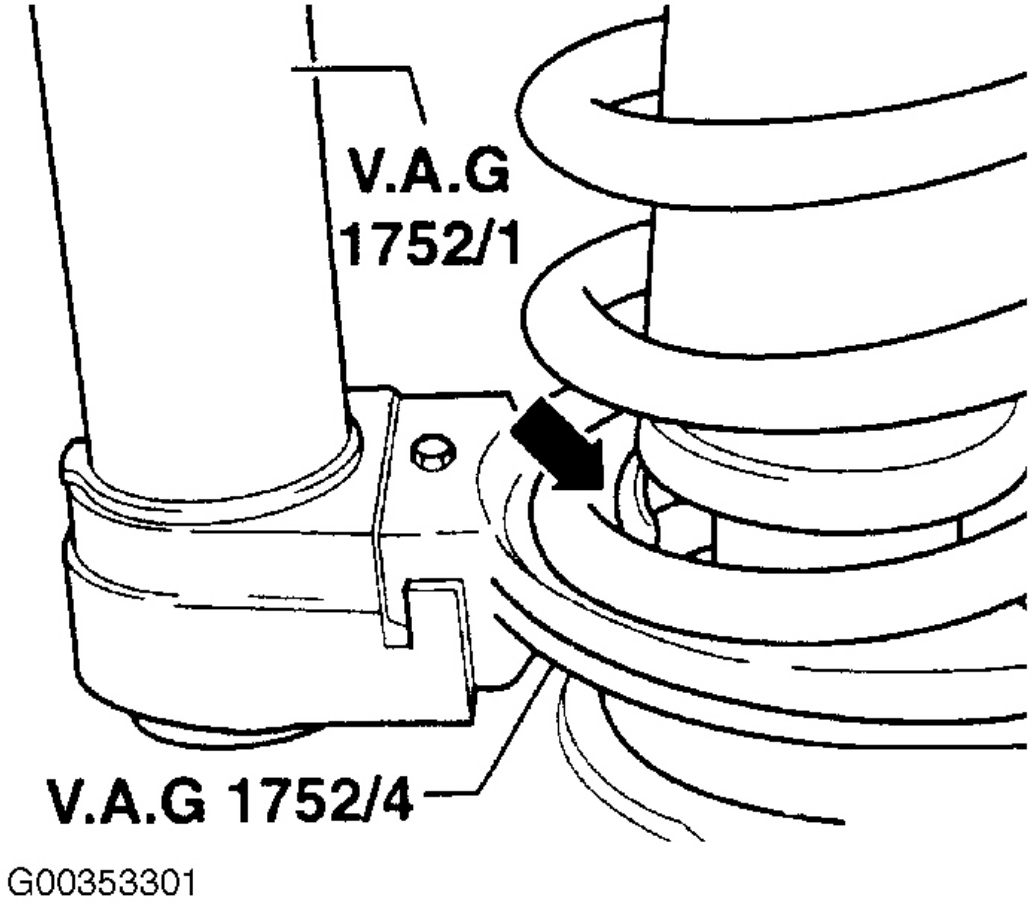


Fig. 35: Seating Coil Spring In Spring Holder
Courtesy of VOLKSWAGEN UNITED STATES, INC.

3. Slowly release tension on spring and remove upper strut mount, spring plate and coil spring. See **Fig. 37** . Remove protective sleeve and buffer stop.
4. Remove old strut from holder or vise. Place new strut into holder or vise. Install coil spring. Verify that coil spring rests against lower spring plate stop. See **Fig. 36** . Install buffer stop and protective sleeve.

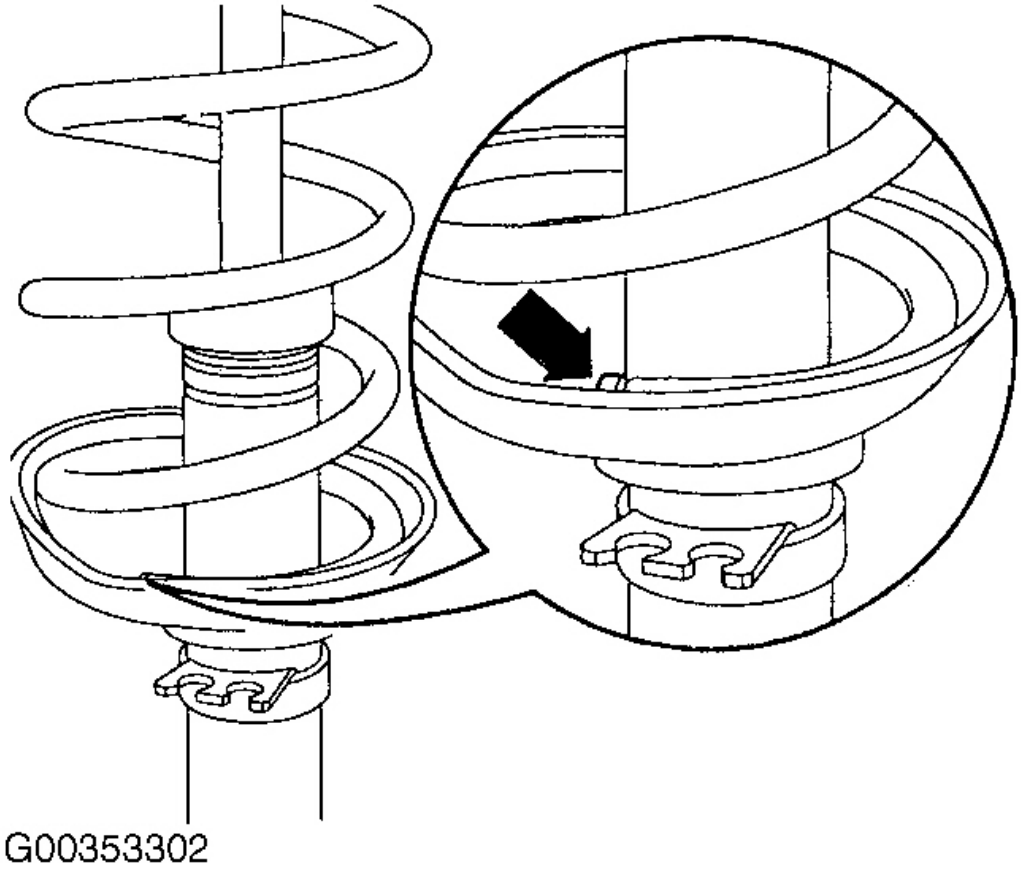
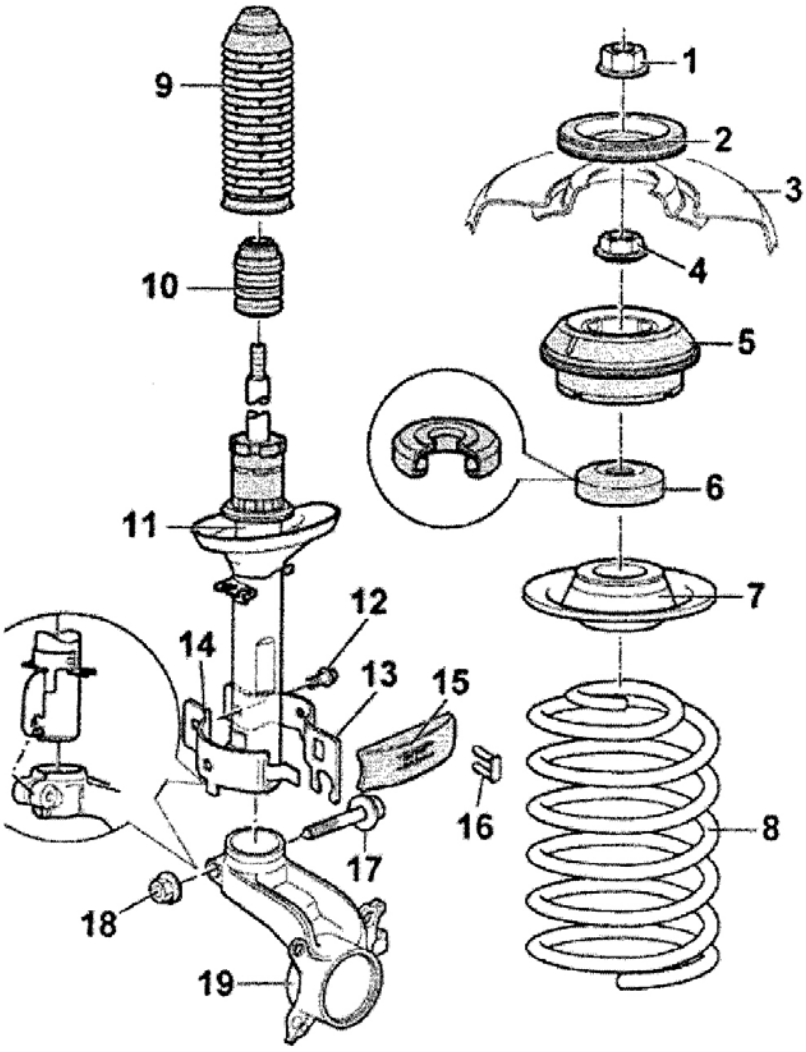


Fig. 36: Seating Coil Spring Against Spring Stop
Courtesy of VOLKSWAGEN UNITED STATES, INC.

5. Compress coil spring. Install spring plate and upper strut mount. Top end of coil spring must rest against stop of spring plate.
6. Install NEW piston rod nut. Tighten piston rod nut to specification. See **TORQUE SPECIFICATIONS** .



1. Self-Locking Nut
2. Stop
3. Suspension Strut Turret
4. Hex Nut
5. Suspension Strut Mount
6. Axial Ball Bearing
7. Spring Plate
8. Coil Spring
9. Protective Sleeve
10. Buffer Stop
11. Shock Absorber
12. Hex Bolt
13. Bracket
14. Clamp
15. Heat Shield
16. Clamp
17. Hex Bolt
18. Self-Locking Nut
19. Wheel Bearing Housing

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Fig. 37: Exploded View Of Strut Assembly
Courtesy of VOLKSWAGEN UNITED STATES, INC.

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS

Application	Ft. Lbs. (N.m)
Axle Shaft Nut (12 Point) (1)	
Step 1	148 (200)
Step 2	Loosen Nut 1/2 Turn
Step 3	Turn Hub 180 Degrees
Step 4	37 (50)
Step 5	Additional 60° Turn
Axle Shaft Bolt (GTI) (1)	
Step 1	184 (250)
Step 2	Additional 90° Turn
Step 3	Loosen Nut 1/2 Turn
Step 4	Turn Hub 180 Degrees
Step 5	184 (250)
Step 6	Additional 90° Turn
Axle-To-Drive Flange Bolt (1)	
M8 x 18, M8 x 28 & M8 x 48	30 (40)
M10 x 20 & M10 x 48	59 (80)
Ball Joint Nut	(1) 33 (45)
Ball Joint-To-Control Arm Bolt (1)	
Step 1	15 (20)
Step 2	Additional 90° Turn
Caliper Guide Pin Bolt	21 (28)
Caliper-To-Wheel Bearing Housing Bolts	92 (125)
Lower Control Arm-To-Subframe Front Bushing Bolt (1)	
Step 1	52 (70)
Step 2	Additional 90° Turn
Lower Control Arm-To-Subframe Rear Bushing Bolt (1)	
Step 1	52 (70)
Step 2	Additional 90° Turn
Pendulum Support Bolt (1)	
To-Subframe (M8 x 48)	
Step 1	15 (20)
Step 2	Additional 90° Turn
To-Transmission (M10 x 30 & M10 x 70)	
Step 1	30 (40)
Step 2	Additional 90° Turn
Stabilizer Bar Clamping Bolt	18 (25)

Stabilizer Bar Link-To-Control Arm Bolt	33 (45)
Stabilizer Bar-To-Link Nut	(1) 22 (30)
Stabilizer Bar Link-To-Strut (1) , (3)	
Step 1	37 (50)
Step 2	Additional 90° Turn
Steering Gear-To-Subframe Bolt (1)	
Step 1	15 (20)
Step 2	Additional 90° Turn
Strut Piston Rod Nut	(1) 44 (60)
Strut-To-Body Mounting Nut	(1) 44 (60)
Strut-To-Wheel Bearing Housing Bolt/Nut (1)	
Step 1	44 (60)
Step 2	Additional 90° Turn
Subframe Bolt (1)	
Rear Bolt (M14 x 1.5 x 63)	
Step 1	74 (100)
Step 2	Additional 90° Turn
Front Bolt (M14 x 1.5 x 95)	
Step 1	74 (100)
Step 2	Additional 90° Turn
Tie Rod End Nut	(1) 33 (45)
Wheel Lug Bolt	89 (120)
Wiper Arm Nut	(2) 15 (20)

(1) Always replace fastener with NEW part.

(2) New Beetle only.

(3) For vehicles with modified stabilizer bar mounting. Stabilizer bar link connects to stabilizer bar and on strut housing, below coil spring.

SPECIAL TOOLS

Use following illustrations to identify special tools. See **Fig. 38** -**Fig. 40** .

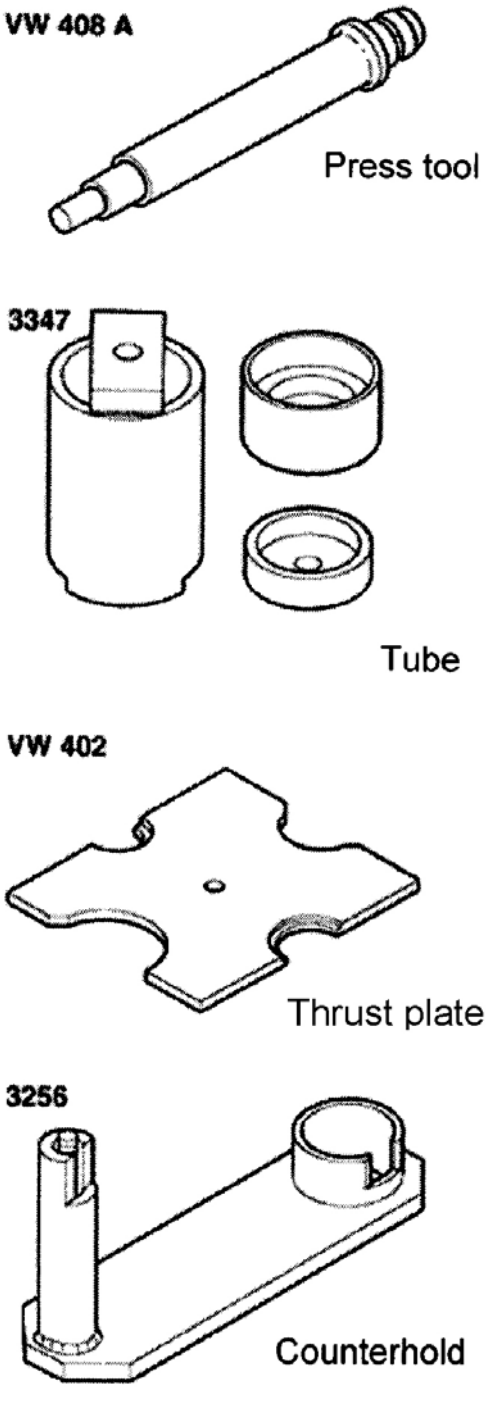

Fig. 38: Identifying Special Tools (1 Of 4)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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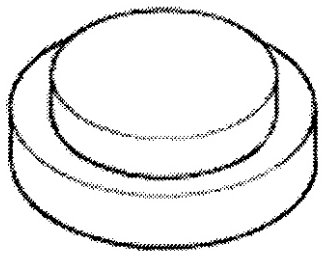

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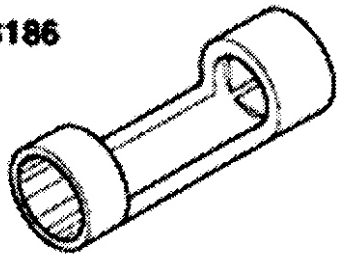

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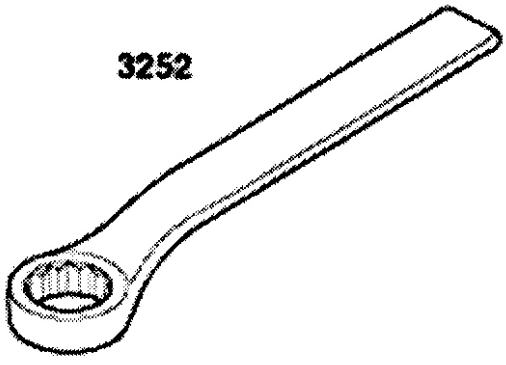

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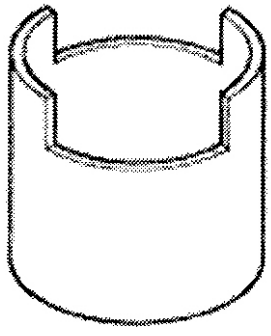

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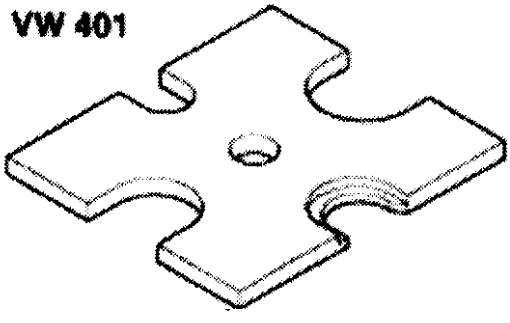

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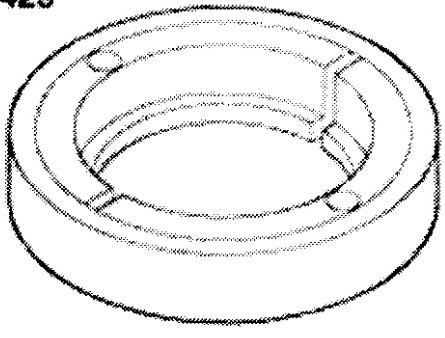

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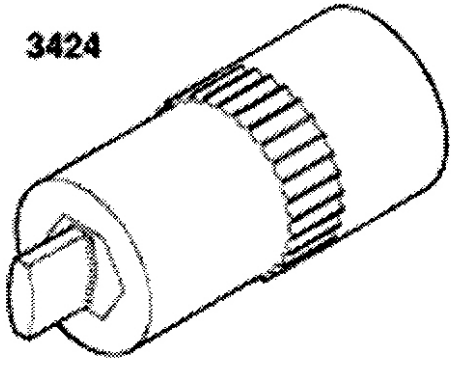

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Fig. 39: Identifying Special Tools (2 Of 4)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

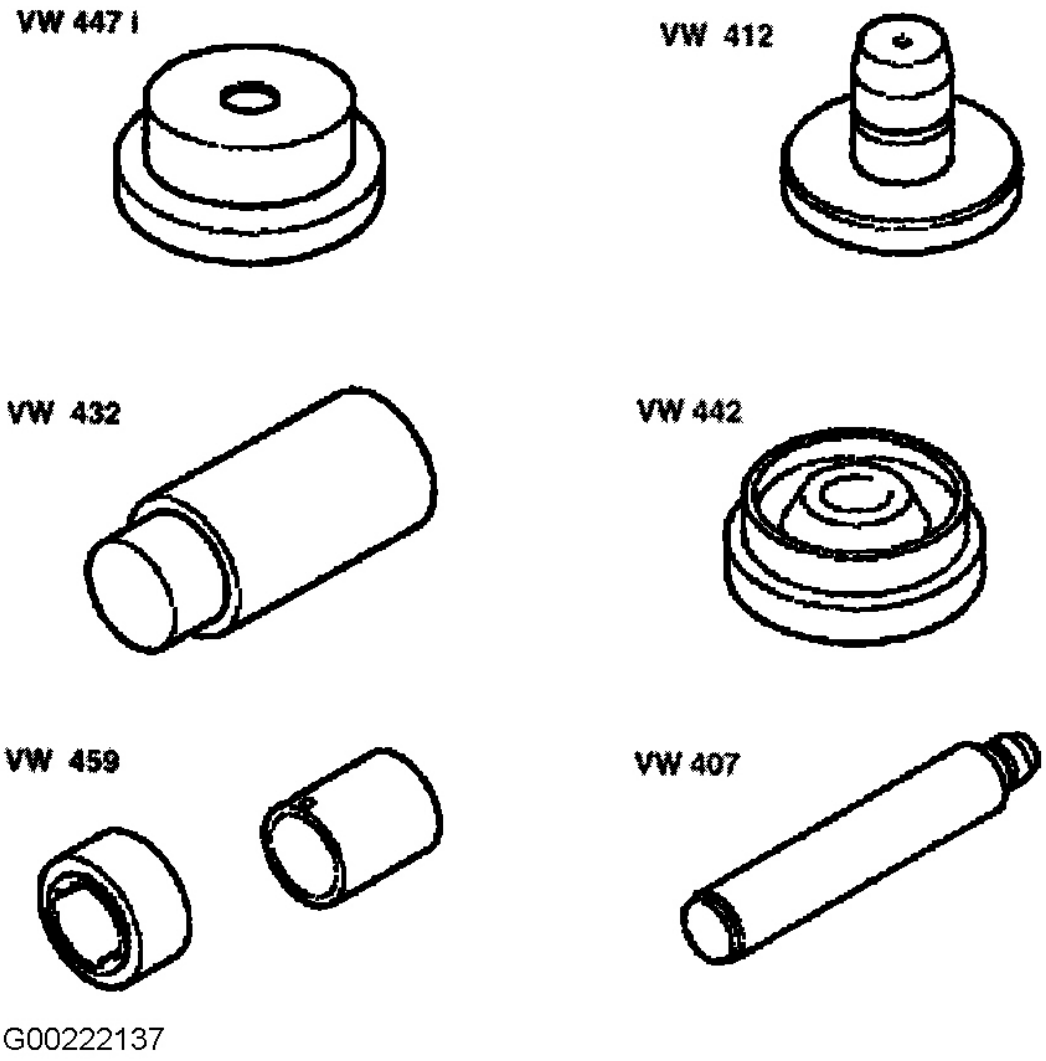

Fig. 40: Identifying Special Tools (3 Of 4)
Courtesy of VOLKSWAGEN UNITED STATES, INC.